FINAL
WATERSHED PLAN AND
ENVIRONMENTAL IMPACT STATEMENT

NECK RIVER WATERSHED

NEW HAVEN COUNTY

CONNECTICUT

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
STORRS, CONNECTICUT

ADDENDUM

Neck River Watershed Plan
Connecticut

This addendum shows project costs, benefits, and the benefit cost ratio for 6 5/8 percent interest rate based on 1977 installation costs.

Annual project costs, benefits, and benefits cost ratio are as follows:

1.	Project Costs	$16,400
2.	Project Benefits	26,000
3.	Benefit Cost Ratio	1.6:1.0

WATERSHED PLAN AND

ENVIRONMENTAL IMPACT STATEMENT

NECK RIVER WATERSHED
New Haven County, Connecticut

Prepared under the Authority of the Watershed Protection and Flood Prevention Act, Public Law 83-566, as amended (16 USC 1001-1008) and in accordance with Section 102(2)(C) of the National Environmental Policy Act of 1969, Public Law 91-190, as amended (42 USC 4321 et seq).

Prepared by:

Town of Madison Flood and Erosion Control Board
New Haven County Soil and Water Conservation District
U.S. Department of Agriculture, Soil Conservation Service
U.S. Department of Agriculture, Forest Service

PREFACE

Enclosed are two documents...the Watershed Plan and Environmental Impact Statement for the Neck River Watershed, town of Madison, Connecticut.

The Watershed Plan has been developed by the Town of Madison Flood and Erosion Control Board, and The New Haven County Soil and Water Conservation District with the assistance of the U.S. Department of Agriculture and is the basis for the authorization of federal assistance to implement the proposed project in accordance with the Watershed Protection and Flood Prevention Act, Public Law 83-566, as amended (16 USC 1001-1008).

An Environmental Impact Statement has been prepared by the U.S. Department of Agriculture in compliance with Section 102(2)(C) of the National Environmental Policy Act of 1969, Public Law 91-190, as amended (42 USC 4321 et seq).

The Environmental Impact Statement contains the detailed information on project area, planned project, problems, impacts, alternatives, etc.

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Neck River Watershed

Town of Madison

New Haven County, Connecticut

May 1978

NECK RIVER WATERSHED
Town of Madison

New Haven County, Connecticut

SUMMARY AND DESCRIPTION

The Neck River Watershed is an area of 912 acres located entirely in the town of Madison, which is situated in south central Connecticut. This plan for watershed protection and flood prevention is sponsored by the Town of Madison Flood and Erosion Control Board, herein referred to as the Sponsor, and endorsed by the New Haven County Soil and Water Conservation District. (See Appendix B)

The major problem in the watershed is floodwater damage to seven houses, four other lawns and 800 feet of town road. During flood times these eleven single-family properties, as well as a twelfth, become isolated. Damages occur annually, and the 100-year event will cause an estimated $58,500 damages.

A diversion dam with accompanying diversion channel and dike will alleviate the flood problem to the endangered area. This protection is provided from flooding due to storms up to and including the 100-year event. Land treatment measures consist of woodland and wildlife habitat improvement, and technical assistance to the town, developers and individual landowners.

Adverse effects to the environment will be negligible.

The project will be installed over a one-year period. The total project installation cost is estimated to be $239,600 of which $221,000 will be PL-566 funds, and $18,600 other funds.

The Sponsor will provide the necessary landrights, be responsible for operation and maintenance of the floodwater diversion structure, and provide engineering and administrative services, as required. In servicing landrights, the Sponsor will meet the requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

The average annual cost of the project is estimated to be $16,000 including $600 for operation and maintenance. The average annual benefits are estimated to be $26,000 resulting in a benefit-cost ratio of 1.6 to 1.0.

PLANNED PROJECT

This plan provides for land treatment measures and a floodwater diversion structure consisting of three measures, a diversion dam with accompanying diversion channel and dike. These measures will provide protection from floods up to and including the 100-year flood event. (See Appendix D)

Land treatment will be applied to 608 acres of forest lands. The Connecticut Department of Environmental Protection, Forestry Division, in cooperation with the U.S. Forest Service, will provide technical assistance as needed for installing forest land management measures on private forest land. Assistance will be given to the appropriate town commissions and boards, community leaders, and land developers concerning use of forest land and the development of forest and wildlife resource measures in expanding urban areas. General technical assistance will also be used for further environmental education and to stimulate landowners to implement the forestry programs. The current level of forest fire protection will continue.

The New Haven County Soil and Water Conservation District and the Soil Conservation Service (SCS) will provide technical assistance to landowners, planning boards, community leaders and developers for installation, treatment and development of resources.

The planned floodwater diversion structure will divert all flow in excess of normal flow from the existing stream. These excess flows will circumvent the endangered area and subsequently rejoin the Neck River. (See Appendix D, Figure 4)

Refer to the Environmental Impact Statement for a detailed description of the planned project. The project will be installed as described in the Environmental Impact Statement.

INSTALLATION COSTS - MONETARY

The total of all costs for the project is estimated to be $246,700. These costs consist of project costs of $245,300 and land treatment-going program costs of $1,400 (see Table 1). Project costs consist of land treatment-accelerated, structural measures and project administration costs.

Land treatment-going-program costs include $1,000 for technical assistance from SCS and $400 for fire control-going program from the Forest Service. The accelerated land treatment consists of Forest Service expenditures of $5,700, of which $3,100 is from PL-566 funds. The Forest Service portion will provide $1,700 for application of land treatment measures and $900 for technical assistance under the cooperative federal-state forestry program.

Structural measures costs, $212,200, and project administration costs, $27,400, make up the installation costs of $239,600 (see Table 2). The structural measures costs are subdivided into construction costs, engineering services, landrights and project administration.

Construction costs are based on estimated quantities and current unit costs. The unit costs are based on actual bid prices for projects in Connecticut. The estimated construction cost for the floodwater diversion structure, including a 12 percent contingency allowance, is $181,000. (See Table 2)

Landrights values and costs are estimated to be $16,200 which includes $9,200 for replacing a bridge. The cost for the bridge will be furnished by the town, and other landrights valued at $7,000 will be donated by the landowners. (See Table 2)

Project administration costs include the cost of contract administration, relocation assistance advisory services (should relocation occur), government representatives, inspection during construction, and other administrative and clerical services necessary to install the project. The Service will bear the costs it incurs, but may not use Public Law 566 funds to assist the Sponsor to provide relocation assistance advisory services. Project administration costs are estimated to be $27,400, of which $25,000 is PL-566 funds. No relocation costs are anticipated. (See Table 2)

(See AGREEMENT section for cost sharing between the Sponsor and the SCS.)

Average annual flood damage reduction benefits are estimated to be $26,000. Residential floodwater damage will be reduced by $18,400, road floodwater damages by $4,200, and indirect floodwater damages by $3,400.

Average annual costs, benefits, and a comparison of benefits and costs are shown in Tables 4, 5 and 6, respectively. The benefit-cost ratio is based on current prices for installation costs and normalized prices for benefits, and operation and maintenance costs. The ratio of average annual benefits ($26,000) to average annual costs ($16,000) is 1.6 to 1.0.

The Town of Madison Flood and Erosion Control Board (the Sponsor) will:

1. Acquire all necessary landrights and exercise its power of eminent domain, as necessary.

2. Provide project administration services it requires to determine that the structural measures are installed as planned.

3. Acquire any permits required for installation of the structural measures.

4. In the event of relocation, it will fulfill its responsibilities under the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 (Public Law 91-646, 84 Stat 1894).

The New Haven County Soil and Water Conservation District (the Endorser) will:

1. Cooperate with the state of Connecticut, Department of Environmental Protection (DEP), Forestry Division, to install necessary forest land treatment.

2. Assist cooperators in application of land treatment with the going program with SCS technical assistance.

The Forest Service will:

1. In cooperation with the DEP, Forestry Division,

   a. provide technical assistance to landowners for determination of needed practices and installation of forest treatment measures, and

   b. implement proposed land treatment measures of the forestry program.

2. Cooperate with the forest fire program.

The SCS will:

1. Furnish engineering services for surveys, layouts, design and preparation of plans and specifications for structural measures.

2. Provide for project administration services it requires, including a government representative, to administer the expenditure of federal funds, and inspection services to insure that all structural measures are installed in accordance with plans and specifications.

3. At the request of the Sponsor, contract for the installation of the structural measures.

4. Notify the National Park Service if any previously unidentified evidence of cultural values are discovered during investigations or construction in accordance with the procedures set forth in Section 3 of PL 93-291.

5. At the request of the town, individual landowners, or developers furnish conservation planning assistance.

Federal assistance, financial and other, to be furnished by SCS in carrying out the project, is contingent upon the appropriation of funds for this purpose and subject to the following conditions:

1. The Sponsor has acquired all necessary landrights.

2. The necessary project agreements and operation and maintenance agreements have been executed.

The Sponsor is authorized to carry out its responsibilities and objectives under the authority of Section 25-84 through 25-98, 1958 Rev. of the General Statutes amended to 1977. Funds to be provided will be from normal sources of revenue, authorized and appropriated by the Sponsor.

The Sponsor has analysed its financial needs in consideration of the expected installation, estimated operation and maintenance and replacement requirements of the works of improvement so that funds will be available when needed through donations, cash reserves, tax or assessment levies, or credit.

OPERATION AND MAINTENANCE PROVISIONS

LAND TREATMENT

Land treatment measures on open land will be maintained by owners and operators on whose land the measures are installed. These measures are, or will be, provided for in conservation plans developed under agreement with the New Haven County Soil and Water Conservation District. The intensity of the operation and maintenance by landowners will be dependent upon the specific interests and personal commitments to the principles of conservation of the individual.

The Sponsor will encourage landowners and operators to operate and maintain the land treatment measures for the protection and improvement of the watershed. Installed forest land treatment measures will be maintained by landowners and responsible land managers. Technical assistance will be available through the going cooperative forestry programs of the state of Connecticut DEP, Forestry Division, in cooperation with the U. S. Forest Service.

STRUCTURAL MEASURES

Upon acceptance from the contractor, structural works of improvement will be operated and maintained by the Sponsor. The Sponsor will perform the necessary operation and maintenance utilizing their own capabilities or through arrangements with others satisfactory to SCS. However, a time period not to exceed three years is allowed for establishment of vegetative cover associated with each structural measure. During this time period, additional work required to obtain satisfactory vegetative cover may be performed with cost sharing at the same rate as for installation of the original works.

Repairs or additional work, not eligible for PL-566 financial assistance, include maintenance work and work resulting from improper operation and maintenance. However, the SCS will provide technical assistance that may be needed in performing any of these tasks. Refer to the "Planned Project" section of the Environmental Impact Statement for specifics on operations and maintenance.

An Operation and Maintenance Agreement between the Sponsor and the SCS will be executed immediately prior to signing a project agreement for the structural measures. The Operation and Maintenance Agreement will provide adequate and sound arrangements for proper operation, timely inspection, and appropriate performance of needed maintenance. The agreement will comply with the Connecticut Watershed Operation and Maintenance Handbook. In addition, the Operation and Maintenance Agreement will include a set of standards which will govern the retention, utilization and disposition of property, real and personal, acquired in whole, or in part, or improved with Public Law 566 funds.

All structural measures will be inspected at least annually and after every major storm or the occurrence of any unusual or adverse condition that affects their operation. The inspections, for three years following the installation of the structure will involve representatives of the Sponsor and the SCS. After the third year, the Sponsor will make annual inspections, prepare a report and send a copy to the SCS. The Connecticut Operation and Maintenance Handbook will be used as a basic guide. Professional engineering advice will be sought when any questionable problems occur.

AGREEMENT

between the following local organization:

Town of Madison Flood and Erosion Control Board
(Referred to herein as the Sponsor)

and the

Soil Conservation Service
United States Department of Agriculture
(Referred to herein as SCS)

endorsed by
New Haven County Soil and Water Conservation District

Whereas, application has heretofore been made to the Secretary of Agriculture by the Sponsor for assistance in preparing a plan for works of improvement for the Neck River Watershed, Town of Madison, State of Connecticut, under the authority of the Watershed Protection and Flood Prevention Act (16 USC 1001-1008); and

Whereas, the responsibility for administration of the Watershed Protection and Flood Prevention Act, as amended, has been assigned by the Secretary of Agriculture to the SCS; and

Whereas, there has been developed through the cooperative efforts of the Sponsor and the SCS this plan for works of improvement for the Neck River Watershed, Town of Madison, State of Connecticut:

Now, therefore, in view of the foregoing considerations, the Secretary of Agriculture, through the SCS, and the Sponsor hereby agree on this plan and that the works of improvement for this project will be installed, operated, and maintained in accordance with the terms, conditions, and stipulations provided for in this watershed plan and including the following:

1. The Sponsor will acquire, with other than PL-566 funds, such land-rights as will be needed in connection with the works of improvement. (Estimated values and cost of $16,200.)

2. The Sponsor assures that comparable replacement dwellings will be available for individuals and persons displaced from dwellings, and will provide relocation assistance advisory services and relocation assistance, make the relocation payments to displaced persons, and otherwise comply with the real property acquisitions policies

contained in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646, 84 Stat. 1894) effective as of January 2, 1971, and the regulations issued by the Secretary of Agriculture pursuant thereto. The cost of relocation payments will be shared by the Sponsor and the SCS as follows:

	Sponsor (percent)	SCS (percent)	Estimated Relocation Payment Costs (dollars)
Relocation Payments	8.7	91.3	0*

* Investigation has disclosed that under present conditions the project measures will not result in the displacement of any person, business, or farm operation. However, if relocations become necessary, relocation payments will be cost-shared in accordance with the percentages shown.

3. The Sponsor will acquire or provide assurance that landowners or water users have acquired such water rights pursuant to state law as may be needed in the installation and operation of the works of improvement.

4. The percentages of construction costs of structural measures to be paid by the Sponsor and by the SCS are as follows:

Works of Improvement	Sponsor (percent)	SCS (percent)	Estimated Construction Costs (dollars)
Floodwater diversion structure	0	100	181,000

5. The percentages of the engineering costs to be borne by the Sponsor and the SCS are as follows:

Works of Improvement	Sponsor (percent)	SCS (percent)	Estimated Engineering Costs (dollars)
Floodwater diversion structure	0	100	15,000

6. The Sponsor and SCS will each bear the costs of Project Administration which it incurs, estimated to be $2,400 and $25,000 respectively.

7. The Sponsor, with the cooperation of The New Haven County Soil and Water Conservation District, will provide assistance to landowners and operators to assure the installation of the land treatment measures shown in the watershed plan.

8. The Sponsor, with the cooperation of The New Haven County Soil and Water Conservation District, will encourage landowners and operators to operate and maintain the land treatment measures for the protection and improvement of the watershed.

9. The Sponsor will be responsible for the operation and maintenance of the structural works of improvement by actually performing the work or arranging for such work in accordance with agreements to be entered into prior to issuing invitations to bid for construction work.

10. The costs shown in this plan represent preliminary estimates. In finally determining the costs to be borne by the parties hereto, the actual costs incurred in the installation of works of improvement will be used.

11. This agreement is not a fund obligating document. Financial and other assistance to be furnished by SCS in carrying out the plan is contingent upon the fulfillment of applicable laws and regulations and the availability of appropriations for this purpose.

12. A separate agreement will be entered into between the SCS and the Sponsor before either party initiates work involving funds of the other party. Such agreement will set forth in detail the financial and working arrangements and other conditions that are applicable to the specific works of improvement.

13. This plan may be amended, revised, or terminated only by mutual agreement of the parties hereto except that SCS may terminate financial and other assistance in whole, or in part, at any time it determines that the Sponsor has failed to comply with the conditions of this agreement. In this case, SCS shall promptly notify the Sponsor in writing of the determination and the reasons for the termination, together with the effective date. Payments made to the Sponsor or recoveries by SCS under projects terminated shall be in accord with the legal rights and liabilities of the parties.

14. No member of, or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this plan, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

15. The program conducted will be in compliance with all requirements respecting nondiscrimination as contained in the Civil Rights Act of 1964, as amended, and the regulations of the Secretary of Agriculture (7 C.F.R. 15.1-15.12), which provide that no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any activity receiving federal financial assistance.

TOWN OF MADISON FLOOD AND EROSION CONTROL BOARD

By /s/ Evans B. Norcross, Jr.

Title Chairman

Madison, Connecticut 06443
Address Zip Code

Date September 18, 1978

The signing of this plan was authorized by a resolution of the Town of Madison Flood and Erosion Control Board meeting held on 9/16/78.

/s/ Marshall L. Smith
Name
Title Secretary

838 Boston Post Road
Madison, Connecticut 06443
Address Zip Code

Date September 18, 1978

The authority of the above action is: Section 25-84 through 25-98, 1958 Rev. of the General Statutes amended to 1977.

Appropriate and careful consideration has been given to the environmental impact statement prepared for this project and to the environmental aspects thereof.

SOIL CONSERVATION SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

Approved by: /s/ John W. Tippie
State Conservationist

Date: September 18, 1978

Endorsed By:

NEW HAVEN COUNTY SOIL AND WATER CONSERVATION DISTRICT

By /s/ Charles N. Hammarlund, Jr.

Title Chairman

Foot of the Lake
North Guilford, Connecticut 06437
Address Zip Code

Date September 18, 1978

The signing of this plan was authorized by a resolution of the governing body of the New Haven County Soil and Water Conservation District adopted at a meeting held on

/s/ Margaret Maunder
Name
Title Secretary

322 North Main Street
Wallingford, Connecticut 06492
Address Zip Code

Date September 18, 1978

TABLES

TABLE 1 - ESTIMATED INSTALLATION COSTS

Neck River Watershed

	Unit	Number Non-Federal Land	Total	Estimated Cost (Dollars) 1/ PL-566 Funds Nonfederal Land SCS 2/	FS 2/	Total	Other Nonfederal Land SCS 2/	FS 2/	Total	Total
LAND TREATMENT-GOING PROGRAM										
Fire Control	Acres	608	608					400	400	400
Technical Assistance 4/							1,000		1,000	1,000
SUBTOTAL								400	1,400	1,400
LAND TREATMENT-ACCELERATED										
Forest Lands	Acres	126	126					1,700	1,700	1,700
Technical Assistance 4/					3,100	3,100		900	900	4,000
SUBTOTAL					3,100	3,100		2,600	2,600	5,700
TOTAL LAND TREATMENT					3,100	3,100	1,000	3,000	4,000	7,100
STRUCTURAL MEASURES										
Floodwater Diversion	No	1	1	196,000		196,000	16,200		16,200	212,200
SUBTOTAL - Structural Costs				196,000		196,000	16,200		16,200	212,200
PROJECT ADMINISTRATION										
Construction Inspection				10,000		10,000				10,000
Other				15,000		15,000	2,400		2,400	17,400
SUBTOTAL-Administration Structural Measures				25,000		25,000	2,400		2,400	27,400
TOTAL PROJECT COSTS 3/				221,000	3,100	224,100	18,600	2,600	21,200	245,300 3/
TOTAL ALL COSTS				221,100	3,100	224,100	19,600	3,000	22,600	246,700

1/ Price Base 1977
2/ Federal agency responsible for assisting in installation of works of improvement
3/ Excludes - Land Treatment - Going Program
4/ Primarily used for consultation with town boards and commissions

December 1977

TABLE 2 - ESTIMATED COST DISTRIBUTION

Neck River Watershed, Connecticut

(Dollars) 1/

Item	Installation Costs PL-566 Funds			Installation Costs Other Funds		Total Installation Costs
	Construction	Engineering	Total PL-566	Land Rights	Total Other	
STRUCTURAL MEASURES						
Floodwater Diversion Structure	181,000	15,000	196,000	16,200 2/	16,200	212,200
SUBTOTAL-Structural	181,000	15,000	196,000	16,200	16,200	212,200
PROJECT ADMINISTRATION	xxxxxx	xxxxx	25,000	xxxxx	2,400	27,400
GRAND TOTAL	181,000	15,000	221,000	16,200	18,600	239,600

1/ Price Base 1976
2/ Includes $9,200 for bridge replacement

December 1977

TABLE 3 - STRUCTURAL DATA

DIVERSION DAM

NECK RIVER WATERSHED, MADISON, CONNECTICUT

Item	Unit	
Drainage area diverted	Sq. mi.	1.38
Volume of fill	Cu. yds.	3,400
Elevation top of dam	Ft. msl	191
Maximum height of dam	Ft.	12
Normal flow pipe	Dia. - inches	8
Maximum discharge through dam	cfs	3.5
Design storm diverted		
100-year-24-hour rainfall	Inches	7.1
Peak discharge diverted	cfs	700
Storm crest elevation at dam	Ft. msl	188.77

December 1977

TABLE 3B - STRUCTURAL DATA
DIVERSION CHANNEL
NECK RIVER WATERSHED, MADISON, CONNECTICUT

Station	Drainage Area sq. mi.	100-Year Frequency Design Discharge CFS	Water Surface Elevation Feet MSL	CHANNEL DIMENSIONS							
				Hydraulic Gradient ft/ft	Bottom Gradient ft/ft	Bottom Width ft	Bottom Elevation ft-MSL	Side Slopes	"N" Value	Design Velocity ft/sec	Excavation Volume Cu.Yds.
2+50	1.38	700	188.77			12	183.42	1.5		6.5	
				.0084	.0060				.040		3,760
8+20			183.97				180.00			9.8[1]/	
				.0619	.0600				.045		3,530
13+00[3]/			154.28				151.20			13.7	
				N.A.	.0600				.015		180
13+25[2]/[3]/			N.A.				N.A.			N.A.	
				N.A.	.0040				.015		160
13+50[3]/			155.93				149.60			5.15	
				.0024	.0040				.040		1,590
15+95			155.33				148.62			4.73	
									.040		330
16+08			Private Drive Bridge				148.57			5.55	
									.040		
16+20			155.04				148.52			4.93	
				.0024	.0040				.040		450
17+23[4]/			154.79			12	148.11			4.74	
				-.0074	.0040				.040		
17+50[4]/	1.38	700	154.97			24	148.00	1.5		2.92	
TOTAL	1.38										10,000

1/ Control Section - critical flow occurs
2/ Break-in-grade
3/ Concrete lining 13+00 - 13+50 - Hydraulic Jump Location Unstable Flow Area
4/ Rock lined transition
N.A. = Not Applicable

October 1977

December 1977

TABLE 4 - ANNUAL COST

Neck River Watershed, Connecticut

(Dollars)1/

Evaluation Unit	Amortization of Installation Cost2/	Operation and Maintenance Cost	Total
Floodwater Diversion Structure	13,600	600	14,200
Project Administration	1,800	xxx	1,800
GRAND TOTAL	15,400	600	16,000

1/ Price base 1976
2/ Amortized @ 6.375 percent interest rate for 100 years.

December 1977

TABLE 5 - ESTIMATED AVERAGE ANNUAL FLOOD DAMAGE REDUCTION BENEFITS

Neck River Watershed, Connecticut

(Dollars) 1/

Item	Estimated Average Annual Damage		
	Without Project	With 3/ Project	Damage Reduction Benefit 2/
Floodwater			
Nonagricultural			
Residential	18,400	-0-	18,400
Road	4,200	-0-	4,200
Subtotal	22,600	-0-	22,600
Indirect	3,400	-0-	3,400
TOTAL	26,000		26,000

1/ Price base 1976
2/ Excludes Effects of Accelerated Land Treatment Measures.
3/ Damage could occur from floods greater than the 100-year frequency.

December 1977

TABLE 6 - COMPARISON OF BENEFITS AND COSTS

Neck River Watershed, Connecticut

(Dollars)1/

Evaluation Unit	AVERAGE ANNUAL BENEFITS1/ Damage Reduction 2/	Total	Average Annual Cost 3/	Benefit Cost Ratio
Floodwater Diversion Structure	26,000	26,000	14,200	1.8:1.0
Project Administration	xxx	xxx	1,800	xxx
GRAND TOTAL	26,000	26,000	16,000	1.6:1.0

1/ Price base 1976
2/ From Table 5
3/ From Table 4

December 1977

FINAL ENVIRONMENTAL IMPACT STATEMENT

NECK RIVER WATERSHED

NEW HAVEN COUNTY, CONNECTICUT

USDA-SCS-EIS-WS-(ADM)-77-1-D-CT

NECK RIVER WATERSHED

NEW HAVEN COUNTY, CONNECTICUT

FINAL ENVIRONMENTAL IMPACT STATEMENT

JOHN W. TIPPIE
STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE

SPONSORING LOCAL ORGANIZATION

TOWN OF MADISON FLOOD AND EROSION CONTROL BOARD
TOWN HALL
MADISON, CONNECTICUT 06492

MAY 1977

PREPARED BY

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
MANSFIELD PROFESSIONAL PARK
STORRS, CONNECTICUT 06268

USDA ENVIRONMENTAL IMPACT STATEMENT

Neck River Watershed

New Haven County

Connecticut

Prepared in Accordance With
Sec. 102(2)(C) of P.L. 91-190

SUMMARY

I Final

II Soil Conservation Service

III Administrative

IV Description of project purpose and action:

A project for watershed protection and flood prevention in Madison, New Haven County, Connecticut to be implemented under authority of the Watershed Protection and Flood Prevention Act (PL 566, 83d, Congress, 68 Stat. 666), as amended. The planned works of improvement for this 912 acre watershed include conservation land treatment, supplemented by a diversion dam with accompanying diversion channel and dike. Land treatment will be applied to 608 acres of forest lands. The 11 foot high diversion dam will direct floodwaters into a 1,500 foot long diversion channel. A 2.5 foot high dike will form the right side slope of the lower 325 feet of the diversion channel.

V Summary of Impacts:

The project will protect 11 residential properties and 800 feet of road from floodwater damages. These 11 homes as well as a twelfth become isolated during flood times. The structural measures will restrict the use of two acres of residential land which is in private ownership. The land treatment measures will reduce erosion, improve existing wildlife habitat and improve quality of timber stands. Water, air and noise pollution will increase during construction in the area of the structural measures.

The project will require two acres of residential land which includes the existing ditch. The project will create 3.6 man-years of employment during the project installation period.

VI List of Alternatives:

Land Treatment
Acquisition Of All Floodplain Property
Floodproofing And Flood Insurance
Floodwater Retarding Structure
Floodwater Retarding Structure Plus Channel
Floodwater Retarding Structure Plus Conduit
Channel Along Present Stream Course

VII The following have received copies of the Plan and Environmental Impact Statement:

U. S. Department of the Army
U. S. Department of Commerce
Department of Health, Education and Welfare
U. S. Department of the Interior
Department of Transportation
U. S. Environmental Protection Agency
Office of Equal Opportunity, USDA
Federal Power Commission
U. S. Army Corps of Engineers, New England Division
U. S. Department of Interior, Area
U. S. Department of the Interior, Fish & Wildlife Service, Area Supervisor
U. S. Department of the Interior, Fish & Wildlife Service, Regional Director
Environmental Protection Agency, EIS Coordinator, Region I
U. S. Department of Agriculture, Agricultural Stabilization and Conservation Service, State Executive Director
U. S. Department of Agriculture, Forest Service, NE Area Office
U. S. Department of Agriculture, Forest Service, Regional Supervisor
U. S. Department of Agriculture, Coordinator, New England River Basin Commission
U. S. Department of Agriculture, Farmers Home Administration, State Director, Vermont
U. S. Department of Agriculture, Farmers Home Administration, District Supervisor, Connecticut
New England River Basin Commission
Connecticut Department of Environmental Protection
Connecticut Historical Commission
Connecticut State Clearinghouse
Regional Clearinghouse
Natural Resources Defense Council
Friends of the Earth
Environmental Defense Fund
National Wildlife Federation
National Audubon Society
Cooperative Extension Service, Storrs, CT
Conservation Law Foundation
New Haven County Soil & Water Conservation District
Town of Madison

USDA, SOIL CONSERVATION SERVICE

FINAL ENVIRONMENTAL IMPACT STATEMENT 1/

for

NECK RIVER WATERSHED, CONNECTICUT

Installation of this project constitutes an administrative action. Federal assistance will be provided under authority of Public Law 83-566, 83d Congress, 68 Stat. 666, as amended.

SPONSORING LOCAL ORGANIZATION

TOWN OF MADISON FLOOD AND EROSION CONTROL BOARD

ENDORSING LOCAL ORGANIZATION

NEW HAVEN COUNTY SOIL AND WATER CONSERVATION DISTRICT

PROJECT PURPOSES AND GOALS

The purpose of the project is watershed protection and flood prevention. The objectives include reduction of floodwater damages, sediment deposition, and erosion.

1/ All information and data, except as otherwise noted, was collected by SCS and the Forest Service, USDA.

PLANNED PROJECT

The planned project provides for the installation of land treatment measures and a floodwater diversion structure consisting of three measures; a diversion dam, a diversion channel and dike. (See Appendix D) These will provide protection from direct damage to 11 single-family properties and 800 feet of town roadway. In addition to these 11 properties, a twelfth becomes isolated during flood times. The planned measures will be installed over a one-year period.

LAND TREATMENT MEASURES

Land treatment measures are designed to adequately meet the needs of this watershed. Land to be treated during the installation period includes 608 acres of forest land.

Multiple use management and improvement measures on forest land will be applied with emphasis on effective promotion of good forest land use practices. Management plans and technical assistance will be carried out on a voluntary basis with the landowners and operators. Tree planting, controlled harvest cutting, and forest environmental improvement will be used. Management practices employed will include vegetative manipulation of stand stocking to reduce overcrowding, elimination of diseased and deformed species, improvement of wildlife habitat and enhancement of aesthetic values. The cooperative Forest Fire Control Program will be continued.

Technical assistance will be provided through the New Haven County Soil and Water Conservation District to plan land use changes, install needed land treatment measures, manage watershed resources and maintain conservation measures. Assistance will be given to the appropriate town commissions and boards, community leaders and land developers in the proper use, treatment and development of watershed resources.

STRUCTURAL MEASURES

The Neck River diversion dam will be located about 700 feet upstream from the first roadway crossing on Deepwood Drive. This dam will consist of a compacted earth embankment about 415 feet long and 11 feet high. Its function is to divert all excess storm runoff up to and including the 100-year frequency flood into the diversion channel. This dam will be constructed with an 8-inch diameter pipe to allow normal flow through the dam and to restrict the volume of water that will outlet into the present channel during the passage of a major flood event. The upstream side of the dam will be rock-lined one foot above the design high water (100-year frequency flood) and the remainder of the earth embankment will be vegetated. Geological investigations included soil borings and backhoe excavations, this geologic data is considered suitable for final design. (See Appendix D, Fig. 1 and 2)

The diversion channel will generally follow the path of a previously excavated ditch. This ditch was originally constructed to divert water from the problem area. The planned diversion channel will be 1,500 feet long, have a 12-foot bottom width and 1.5:1 side slopes. (See Appendix A, Fig. 1 and 2)

To minimize scour and maintenance, the channel will be rock lined except in the area of rock cut and in the unstable flow area where supercritical flow with hydraulic jump occurs. Here a 50-foot long section of concrete-lined channel will be installed. The channel will terminate with a rock-lined transition section where it empties into the wetland and the existing Neck River channel. (See Appendix D)

A bridge will be built over the diversion channel for a private drive at the lower end of Deepwood Drive. This bridge will be approximately 12 feet wide and 38 feet long with two piers. The bridge will be designed by the town subject to approval of SCS.

The channel terminates in a transition section as it enters a wooded wetland. This transition is a rock-lined extension of the channel where it expands from a 12-foot bottom width into a 24-foot bottom width section over a distance of 28 feet.

There will be no permanent water stored behind the diversion dam. The structures will require 2 acres, ½ acre of which is currently in use as the previously excavated ditch. (See Table 3)

The dike will form the right side slope of the lower 325 feet of the diversion channel. The upstream end of the dike will extend westward to high ground. This extention will divert two small drainages into the channel (See Appendix D). The dike will be 500 feet long and have a maximum height of 2.5 feet. The 2:1 side slope toward the channel will be riprapped. The opposite side will be blended into the existing lawn. The construction of the dike will require 600 cubic yards of fill. (See Appendix D)

Landrights will be acquired for the land area needed for the floodwater diversion structure. No relocations will be necessary.

The contract will require that the contractor adhere to strict guidelines, and/or regulations for minimizing soil erosion, water, noise and air pollution during construction. The guidelines will include measures such as sediment basins and temporary vegetation and mulching to protect exposed areas until permanent vegetation is established. Adherence to state and local health regulations will be required regarding disease vector control, and noise and air pollution. Suppressors will be used to keep dust within tolerable limits. Care will be taken to prevent pollution of surface areas or groundwater by chemicals, fuels, lubricants, sewage and other pollutants. In the event a spill does occur, the appropriate U.S. Environmental Protection Agency office and the Connecticut Department of Environmental Protection will be notified. Clearing and disposal of brush and vegetation will be carried out in accordance with applicable state and local laws.

All operations will be conducted to minimize stream turbidity at and below the diversion dam and diversion channel. Conduits or bridges will be installed where construction activities cross flowing streams.

Soil and waste materials generated during both construction and operation and maintenance will be disposed of in accordance with appropriate state and local regulations. This material will be trucked off the site to an area designated and selected by the Sponsor. The visual resource will be carefully considered both by construction methods and vegetative plantings. Vector control will be mutually agreed upon by the SCS and the Sponsor if necessary.

Mr. John W. Shannahan, State Historic Preservation Officer, state of Connecticut, after reviewing the project, stated there were no historical or archaeological sites impacted by the Neck River project. The National Park Service will be notified if any previously unidentified evidence of cultural values are discovered during detailed investigations or construction, in accordance with the procedures set forth in Section 3 of PL 93-291. As this is a federally assisted local project, there will be no change in the existing responsibilities of a federal agency under Executive Order 11593 with respect to archaeological and historical resources. (See Appendix C)

OPERATION AND MAINTENANCE

Land treatment measures will be maintained by owners and operators of land where the measures are installed. The intensity of the operation and maintenance by landowners will be dependent upon the specific interests and personal commitment to the principles of conservation of the individual.

The Sponsor will be responsible for the operation and maintenance of the structure. An Operation and Maintenance Agreement between the Sponsor and the SCS will be executed prior to the signing of a Project Agreement for the structural measures. The Operation and Maintenance Agreement will provide adequate and sound arrangements for proper operation, timely inspection and appropriate performance of needed maintenance. This will consist of periodic cleanup of sediment and/or debris which could adversely affect the functioning of the planned measures. It will also include maintenance of the diversion dam, such as earth fill and vegetative cover and other repairs, as may be required to assure that this project will continue to function as planned. It is estimated that the annual cost of operation and maintenance will be $600. Funds for the operation and maintenance of the structure will be from appropriations by the Sponsor.

All structural measures will be inspected at least annually and after every major storm or the occurrence of any unusual or adverse conditions that affect their operation. The inspections, for three years following the installation of the structure will involve representatives of the Sponsor and the SCS. Inspections after the third year will be made annually by the Sponsor and they will prepare a report and send a copy to the SCS.

An establishment period of three years is provided for all structural works of improvement and associated vegetative cover. During this period SCS may use PL-566 funds to cost-share on any repairs or other work resulting from unknown conditions or deficiencies. The cost of repairs will be shared in the same ratio as the original floodwater diversion structure.

Repairs or additional work not eligible for PL-566 financial assistance include maintenance work and work resulting from improper operation and maintenance. However, SCS will provide technical assistance that may be needed in performing any of these tasks.

PROJECT COSTS

The total of all costs for the project are estimated to be $246,700. These include $245,300 of project cost and $1,400 of going program costs. Project costs consist of the following: $5,700 for land treatment of which $3,100 is PL-566 funds, $212,200 for structural costs of which $196,000 is PL-566 funds, $27,400 for project administration of which $25,000 is PL-566 funds.

PHYSICAL RESOURCES

The Neck River Watershed is an area of 912 acres (1.4 square miles) located entirely within the town of Madison, New Haven County, Connecticut. The watershed is located in south central Connecticut approximately 30 miles south east of Hartford and 15 miles east of New Haven. The southern extremity of the watershed is about 10 miles from Long Island Sound. The watershed is situated within subregion 07 (Hydrologic Unit Code 01100004) of the Northeast Atlantic Region. This is within the Connecticut Central Coastal River Basin. (See Appendix B)

The floodplain in the effected area is about 8 acres straddling 800 feet of developed town road. This endangered area is located at the southern extremity of the watershed. The Neck River originates in the watershed's northern rolling hills where the high elevation is 430 feet above mean sea level. The project outlet elevation is 148 feet above mean sea level. In the watershed the Neck River is an intermittent stream. Topography shows greatest relief in the upper two-thirds of the watershed with wetlands and other low-gradient areas in the lower half. One intermittent tributary joins the Neck River near the junction of Route 80 and Route 79. Bartlett Pond, in the upper reach of the watershed is the only named water body, but there are a few other unnamed ponds and several unnamed streams. After leaving the project watershed, the river continues southward over a meandering course and empties into the East River, just before its mouth at Long Island Sound, which is six miles from the watershed outlet.

The watershed is in the prevailing westerlies zone, an area subject to periodic coastal storms, including the tropical hurricane type that moves up the Atlantic coast. The average annual precipitation is about 43 inches, distributed relatively uniformly throughout the year. The mean annual temperature is 49°F (9°C) and the mean monthly temperature ranges from 28°F (-2°C) in January to 70°F (21°C) in July. The frost-free period, from May to October, averages 170 days.

The soils in this watershed can be grouped into 3 categories: (1) well drained and moderately well drained soils formed in firm, slowly permeable glacial till, mostly on broad rounded hills and smooth landscapes, (2) well drained and moderately well drained soils formed in friable glacial till, mostly on rough uneven landscapes with bedrock outcrops, (3) poorly drained and very poorly drained soils formed in loamy glacial till and recent alluvial sediments in low areas mainly along the Neck River.

The soil survey is currently active. The field work is complete, the maps are being prepared for publication and the manuscripts are being edited. This report should be completed in late 1978

There are no mineral resources being utilized from the watershed at the present time. Groundwater provides the watershed with domestic water through private wells.

The major land use in this watershed is privately owned woodland, which constitutes about 75 percent of the total watershed area. Development, consisting principally of single family residential units utilize the bulk of the remaining acreage. These are scattered singly and in clusters throughout the watershed, infringing upon the woodland setting. The remainder of the land, about 10 percent, is in wetland, grassland and water surfaces. It is anticipated that the major future land use changes will be a continued development of residential housing.

Land Use	- Acres
Forestland	608
Grassland	10
Ponds & Streams	10
Residential	210
Wetland	74
TOTAL	912

The 74 acres in wetland are primarily Type 7 wooded wetland of the red maple type. The Neck River stream courses utilizes 3 acres while 7 acres are in shallow ponds. Vegetation within 25 feet of the streambank consists of mixed hardwoods including oaks, swamp maple, yellow birch, American beech and white ash. Soils are primarily upland glacial tills on rolling slopes. The only critical erosion conditions would be on new residential construction sites where soil loss and sediment problems occur before vegetation can be re-established.

Stream Description

From its source to the proposed project outlet, the Neck River can be characterized as a small intermittent stream. The upper portions which have the steepest gradient are predominately riffles when there is water flowing in the stream. In riffle areas, the streambed is made up of cobble size or smaller rock with occasional boulders. Lesser amounts of sands and gravel are present. Where pools exist, the bottom material is finer, consisting of sands and silt. Pools are equal to or less than the average channel width, shallow, with about one quarter to one half of an average pool having a vegetative canopy or other form of cover. The streambed varies in width averaging eight to ten feet. The width of flow varies with the season. Spring snow melt and runoff may create bankfull conditions while summer and fall low flows may be so reduced that no surface flow exists. There are few meanders along the stream course which generally flows north to south. Streambanks are low, less than three (3) feet in height, vegetated and stable from a soil erosion standpoint.

An understory is present which includes shrubs and vines such as spicebush, wild grape, viburnum, and young hardwood seedlings. Also present are grasses and wetland plants such as skunk cabbage, arrowhead and watercress. A light growth of algae is present on bottom material along certain portions of the stream.

Water Quantity and Quality

Water quantity and quality studies were conducted during the summer and fall of 1974. There is no stream gage data in the watershed available for analysis. Low water input conditions during August and September of 1974 caused the stream flow to cease with standing water in pool areas only. This characterized the stream as intermittent. The stream regime was studied after flow resumed in October.

Depth of flow during the assessment period (October 1974) ranged from 1 to 4 inches in the riffle areas and 3 to 7 inches in pools. Width of flow varied from one to three feet. Riffle velocities were about one foot per second with discharge in the proposed structure area about .6 cfs.

Water quality was sampled and analyzed during July of 1974. Flow conditions were deemed representative of the water resource. Samples were taken at four stations (see Figure 3 of Appendix D).

Water quality parameters measured were all within the range of suitability for a cold water fishery, during the assessment period. Measured parameters included pH, turbidity, water temperature, air temperature, dissolved oxygen, percent oxygen saturation, free carbon dioxide, alkalinity, nitrogen and phosphorus.

Water Quality at Selected Stations

Parameter	Unit	Station A	Station B	Station C	Station D	Range of Suitability
pH	No.	6.9	6.5	6.9	6.3	6.0 - 9.0
Turbidity	PPM	0	0	0	0	100 PPM
Water Temperature	oC	17.8	18.3	20	17.2	21°C
Air Temperature	°C	25	23.3	27.8	23.8	natural
Dissolved Oxygen (O_2)	mg/l	7	7	9	7	min 5mg/l
Alkalinity ($CaCO_3$)	mg/l	20	20	20	20	natural
Nitrates (N)	mg/l	0.4	0.4	0.4	0.4	natural not to exceed .6 mg/l
Phosphates (Total)(PO_4)	mg/l	1.9	1.9	1.9	1.9	natural
Free CO_2	mg/l	10	10	10	10	25 mg/l
Percent Saturation	%	72	73	96	73	75 min 16 Hrs day
Date		7/22	7/23	7/22	7/23	
Time	Hrs.	1345	1300	1135	1100	

The ph range of 6.3 and 6.9 indicate acidity, but are within range suitable for supporting a cold water and a warm water game fishery. Alkalinity values for the recorded ph indicate the stream to be poorly buffered. The alkalinity is not limiting as far as productivity is concerned. Temperatures at the four sample stations indicate the stream is capable of supporting a cold-water and/or warm-water fishery. Dissolved oxygen valves at stations A, B and D may be a result of ground water inflow. A ground water source would contribute to the carbon dioxide level. The present concentrations of carbon dioxide are not detrimental for a sport fishery. This input of carbon dioxide influences the ph conditions. Phosphate and nitrate levels are capable of supporting a dense growth of algae. Such growths, however, were not observed. There was no indications that inputs would account for increased phosphate levels.

Beck's biotic index which uses biological findings to indicate whether or not organic pollution exists in a stream was applied to the stream. This index indicated that Neck River is essentially free from organic pollution.

ECONOMIC RESOURCES

The 1970 census shows New Haven County population as 744,948 with minorities representing 60,205 or about eight percent of the population. The town of Madison population is given as 9,768 with Madison Center contributing 4,310. There are about 39 minority persons or about 0.4 percent of the population in the town of Madison. The watershed population is estimated to be about 2,000 with 0.4 percent or eight of these estimated to be minorities. There is one minority family in the area benefited by the project. Due to the size of the watershed and the minimum extent of the impact of the structural measures, minorities outside the watershed will not be adversely effected by the project.

Income distribution shows Madison to be an affluent community:

5 percent	0-$3,000
20 percent	$3,000 - $10,000
75 percent	$10,000 or more

The 1976 Grand List for the town of Madison showed over $2 million for assessed value with dwelling houses contributing over half. Dwelling houses are estimated to contribute over three-quarters of the assessed value in the watershed. The houses within the problem area range in value from $49,000 to $68,000.

PLANT AND ANIMAL RESOURCES

Fishery Resources

The existing fishery resources within the project area and upstream to the headwaters are very limited. Black nosed dace, a common minnow, is the dominant fish. Other fish observed were common sunfish and redfin pickerel, both occurring in shallow pool areas. Beginning approximately one mile downstream from the project area, the state of Connecticut maintains a put and take trout fishery during the spring and early summer months. During late fall (October to December) brook trout may move into the project area and above to conduct spawning activities. White suckers are probably seasonal inhabitants of the stream in the project area.

Fishery Habitat Description

Aquatic invertebrates and other fish food organisms are abundant, and diversified with 22 species identified during the investigation period. A lack of suitable fish food is not a limiting factor. The extent and quality of the fishery within the project area, however, is limited by the following:

Quantity of flow - Periods of low flow in and above the project area are the most limiting factor to the fishery, they decrease living space, the availability of cover, reduce the drift of food and in extremes could damage the food resource. Also, the pool riffle ratio is less than optimum. Less than 35% of the stream in the project area is in pools and greater than 60% is in riffles. Under good conditions about 35% of the stream should be in pools and about 35% should be riffles. Cascades, flats and runs should make up the remainder. It should be noted that there are periods of no flow.

Wildlife Habitat

Within the project area, along Deepwood Drive, a surburban wildlife habitat is present. A similar type habitat exists along Bradley Corners Road, Opening Hill Road and other private drives where single family homes have been constructed. This habitat extends in a linear fashion along the roads to a depth usually equal to the houselots. Most of these lots have been landscaped. Lawns are maintained, and berry producing shrubs, vegetable and flower gardens are scattered throughout. These provide varying amounts of food and cover to birdlife and other small animals. Bird feeders are generally associated with this type of development. These feeding stations attract mourning doves and other songbirds which otherwise might not be present in woodland areas. This type of land use maintains edge for wildlife, while providing nesting cover, grasses and herbaceous plants for food and cover.

The major type of wildlife habitat present in the Neck River Watershed is woodland habitat. Woodland habitat elements include: hardwood trees, conifers, shrubs and vines, wild herbaceous plants, and grasses and legumes. Collectively, as a habitat type, this accounts for 720 of the 912 acres of the watershed area.

Wildlife which utilize this type of habitat include game and non-game species such as gray squirrel, ruffed grouse, whitetail deer, raccoon, chipmunk, mice, songbirds, woodpeckers, skunk, opossum, crow and fox.

The woodland is primarily mixed deciduous hardwoods with occasional conifers scattered throughout. Hardwood trees include but are not limited to, red maple and red oak which dominate. Also present are flowering dogwood, American beech, white ash, yellow birch, wild black cherry, chestnut oak, tulip popular and hickory.

The understory contains shrubs and vines such as wild grape, speckled adler, bayberry, blueberry, blackberry, briars, sumac, sassafras, blue beech, and willows. Conifers include white pine, hemlock, red cedar and some mountain laurel. Herbaceous plants such as sweet clover, deer tongue and goldenrod are present, as are mosses, ferns and grasses.

For habitat assessment purposes, the total watershed area is considered to provide woodland wildlife habitat. Woodland habitat contains the vegetative elements previously listed as one of the components. The management condition of each vegetative element is a second component. The third component is the distribution factor of the elements or the percent of the woody vegetation within ¼ mile of open land.

An inventory and evaluation of each of these habitat components results in an acre-value rating. The acre-value is defined as the habitat value of an acre of existing habitat compared with its value if managed for wildlife. The weighted acre-value is defined as the useful (wildlife supporting) acres of habitat for a wide variety of species. It can only be used to determine a before and after condition on the same area. It is not to be used for comparison of values of different areas.

In this watershed of 912 acres, the weighted woodland habitat acre-value is 571 acres.

ARCHAEOLOGICAL AND HISTORICAL RESOURCES

Mr. John W. Shannahan, State Historic Preservation Officer, state of Connecticut, indicated that no known archaeological or historical values were identified within the watershed project area. (See Appendix E)

VISUAL RESOURCES

Neck River is located in the forested New England Upland (LRA 144) of central Connecticut. Much of the area was likely open farmland at the time of the Civil War but has since reverted to a canopy of mixed hardwoods and associated understory vegetation. The Deepwood Drive area is typical of the Upper Neck River which progresses through strongly rolling topography with relatively narrow but gentle valley floors. Steep rock outcrops, narrow floodplains and wooded wetlands are common.

The project landscape is characterized by a natural woodland setting with interspersed residences along Deepwood Drive. Moderate visual variety, in the form of texture and color differences, occurs in vegetation. This variety is accentuated or transformed significantly depending upon the season of the year. Occasional, loosely defined openings occur in the otherwise moderately dense canopy and understory vegetation. Some variation in density permits filtered views through the understory.

Although a small intermittent stream at this location, the Neck River and associated riparian vegetation create a subtle contrast to their surroundings. Natural openings and visual edges are more prevalent.

The residential structures and associated features are strong elements in the landscape. The form of some structures are transitioned into their surroundings by residual vegetation; however, several lawn areas are distinct openings with well defined edges.

An old ditch, partially constructed during the initial development of the area, is located on approximately the same alignment as the proposed structure. Although it has since grown back to understory vegetation, an opening in the vegetative canopy is apparent. In places, it has been used as an area to discard trash.

PROJECTS OF OTHER AGENCIES

There are no other projects for the development of water resources, by other agencies, within the watershed.

LAND AND WATER MANAGEMENT

Residential development of the Neck River Watershed in response to population pressure, has increased the need for sound community and regional planning for a quality environment. This generates need that planning bodies, developers, contractors, and individuals be aware of the problems that arise as these land use changes take place. Since future residential development can only intensify these problems, there is a need to accelerate the traditional job of assisting those making decisions affecting land and water use. It is important that technical assistance be given for implementation of controls to minimize erosion and sediment especially during construction.

FLOODWATER DAMAGE

Seven single-family homes and four other lawns along the lower portion of Deepwood Drive are subject to flooding from the Neck River. During flood times these eleven single-family properties, as well as a twelfth, become isolated. Here, river discharges in excess of 25 cfs exceed the capacity of the stream channel and at the culvert crossing cause water to flow down the drive impeding vehicle traffic and generally disrupting the normal usage of the road. Scattered lawn damage will occur as well. This level of discharge occurs several times annually. Water from a two-year flood event will enter the living areas of three split-level homes. During freezing weather this flooding renders Deepwood Drive impassible for extended periods due to ice buildup. These conditions require approximately $1,000 annually for extra maintenance costs above normal.

Eight hundred feet of town roadway along Deepwood Drive suffers damage due to the frequent flooding. A 25-year flood event will strip the road macadam surface and erode the foundation material to the extent that reconstruction would cost an estimated $24,000.

A 100-year flood event will cause yard damage to eleven single-family properties and prevent access to a twelfth property. Seven of these properties will be inundated such that the homes will have one to three feet of water in the living areas. The 100-year event results in total floodwater damages of approximately $58,500 of which $37,500 is residential damage.

EROSION AND SEDIMENT DAMAGE

There are no areas of critical erosion in the watershed. Land undergoing development will have soil loss rates ranging from 10 to 25 tons per acre, per year. Neither sediment nor erosion were evaluated from an economic standpoint.

PLANT AND ANIMAL PROBLEMS

The land use change expected in this watershed will result from increased residential growth. In the areas affected, the plant community will be subjected to change. Forestland will be replaced by buildings, lawn grasses and shrubs. There are two problems that usually occur when these changes take place. First, the immediate area undergoes alteration resulting from digging, mixing, relocation, and compaction of the soils causing a total alteration of their natural characteristics. Second, permanent vegetation is not reestablished on disturbed areas in a timely manner. Flooding damages plant communities, basically by sediment deposition, physical stress upon the plants by water high velocities, and the resultant soil lost from the root system.

The poor quality of fish habitat is due to the intermittent nature of the stream. At other times of the year, low flow conditions limits living space, increases the hazard of high temperatures, and decreases the availability of cover. Over extended periods, low-flows can reduce the drift of food, and even damage the food resource.

Wildlife habitat for game birds and animals will be reduced with residential encroachment. Songbird habitat may be increased by residential landscaping utilizing trees, shrubs and vines. With the change to residential use only wildlife species compatible with man, such as raccoon and gray squirrels, will stay in the area. Floodwater damages to wildlife include loss of habitat and eggs, and drowning of both young and adults for ground nesting birds, burrowing mammals, and reptiles.

During the environmental assessment and evaluation of the watershed, no endangered or rare plant, fish or wildlife species were identified.

ECONOMIC AND SOCIAL PROBLEMS

The appeal of the rural social order in the northeast is increasing daily. Many people are searching for relief from the tensions created by the rapid urbanization in the past few decades. This social situation seems to be relieved when people can find a little space of their own. It therefore seems likely the trend of converting open space and woodland to residential uses will be maintained.

Connecticut's Office of State Planning prepared a proposed Plan of Conservation and Development for Connecticut, dated January 1973. This proposed plan presents a framework of ten policies and recommendations for the future use of Connecticut's land and water resources. It suggests steps to be taken by all levels of government to ensure that conservation and development needs are more carefully balanced. These ten policies are as follows:

Policy No. 1: Establish and protect sufficient water supply sources to meet future water supply needs.

Policy No. 2: Provide a wide variety of high quality outdoor recreational opportunities to all citizens with highest priority given to the purchase and development of facilities in and near the state's urban areas.

Policy No. 3: Protect the scenic, historic and natural resources of Connecticut from premature, uncontrolled or incompatible development.

Policy No. 4: Protect rivers and lake shores, floodplains and coastline from environmentally destructive alterations and development.

Policy No. 5: Direct urban development to those areas identified as suitable for urban development, preferably close to existing urban, commercial and employment centers.

Policy No. 6: Encourage urban development to be at sufficient densities for the economic provisions of services.

Policy No. 7: Promote staged, continuous development within areas suitable for urban development.

Policy No. 8: Encourage decisions relating to major conservation and development actions to be made in accordance with the locational guide maps of the plan, and with the key policies of conservation and development.

Policy No. 9: Encourage the use of the plan of conservation and development as a guide in reviewing projects and proposals and in assessing the need for amended or new legislation.

Policy No. 10: Encourage local participation in conservation and development activities.

The Neck River Watershed Plan does not conflict with any plans of the South Central Connecticut Planning Region or the town of Madison. The plan is compatible with the Clean Air Act and the Federal Water Pollution Control Act.

The town of Madison subdivision regulations have provisions to control erosion during construction.

CONSERVATION LAND TREATMENT

The New Haven County Soil and Water Conservation District has a going conservation planning and application program through the Soil Conservation Service. This program assists units of government with land use planning and the development of necessary regulations and at the same time, assists individuals with planning and application of conservation measures on their land.

This PL-566 watershed plan includes a segment which will accelerate the U. S. Forest Service's going program. A major portion of the project land treatment program constitutes forest land improvements in cooperation with the U. S. Forest Service. These measures will include: management plans for multiple-use management in cooperation with land owners and operators on 120 acres, tree planting, underplanting and spot-seeding on 7 acres, controlled harvest cutting on 33 acres and forest environmental improvement on 6 acres. The environmental impacts of these specific measures will, 1) bring 120 acres under management, 2) increase forest regeneration and improve quality of the stands, 3) improve existing wildlife habitat on 126 acres of forest land by increasing plant diversity for additional food and cover, 4) reduce erosion and sediment, and 5) increase the future value of saw timber stands.

STRUCTURAL MEASURES

The major effect of installing the floodwater measures will be to protect 11 residential properties and 800 feet of town roadway from direct damage due to flooding up to and including that received during a 100-year frequency flood event. These 11 homes, as well as a twelfth, become isolated during flood times. With the project installed, floodwater damage will be eliminated up to a 100-year flood event. This will provide a floodwater damage reduction benefit estimated to average $26,000 annually.

The floodwater measures will restrict the use of 2 acres of residential land in private ownership, ½ acre of which is the existing ditch. Construction activity will disturb wildlife and fish habitat and increase sediment, erosion, and air and noise pollution levels temporarily.

The project disturbed areas will be reestablished in vegetative cover which will increase plant diversity and edge available to wildlife. The project will not affect normal flow in the Neck River nor have any affect on groundwater recharge. No relocations will be required for this project. If any relocations become necessary, they will be carried out according to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

The proposed floodwater diversion structure will not significantly alter the present wildlife habitat quality or quantity. Land required for construction of the floodwater diversion structure will be approximately 2 acres. Vegetation present includes grasses, shrubs, vines and hardwood trees. The floodwater diversion structure will act as a boundary between the backyard areas and woodlands.

The proposed project will not significantly alter the existing stream system. Normal and lower flows will continue to pass through the existing stream channel. Only greater than normal flows will be diverted through the proposed diversion channel. The diversion dam will be designed so that fish passage will not be blocked. The project as described will not significantly alter water quality conditions in the Neck River. Stream turbidity will increase during construction activities as will noise levels and air pollutants from heavy equipment operations.

The town of Madison requires developers to supply an erosion and sediment control plan at the time development plans are submitted for approval. Erosion and sediment control measures are to be implemented during construction phases to keep soil loss and sediment deposition at a minimum.

Installation of the proposed dike will form a low grassy embankment (2.5' max) along the stream side of the last home on the west side of Deepwood Drive. Since natural vegetation presently forms a similar setting, the change will not be significant.

Placement of the diversion channel on the same approximate alignment as the developer's ditch will clean up areas where trash has collected. A reduction in the density of vegetation will be apparent from the backyards of six homes on the west side of Deepwood Drive. Some new openings in the vegetative canopy will be apparent, however, these will be few in number and small in extent since an existing opening occurs from previous clearing for the developer's ditch.

Maintenance of normal stream flow in the existing Neck River channel will continue to provide the visual values and human use opportunities now existing.

The diversion dam will infringe upon the backyard of the first residence on the west side of Deepwood Drive. It will be very visible to the occupants and from Deepwood Drive. Placement of the diversion dam against the edge of the existing lawn area with contour grading and plantings to transition its geometric form and lines will reduce apparent contrast. Preservation of selected trees now existing in the lawn area will provide intervening vegetation to screen and further ameliorate the apparent visual impact of the diversion dam.

ECONOMIC AND SOCIAL

The project will eliminate flood damages to 11 families and 800 feet of town road from flood events up to and including the 100-year storm. In addition to these 11 families a twelfth will be relieved from isolation during flood times by the project. The average annual benefit is estimated to be $26,000. Floods with rare occurances of greater than the 100-year will cause damages.

Construction of the floodwater diversion structure will create 3.6 man-years of employment over the one year installation period. Annual operation on maintenance practices will create about one month of work per year.

The floodwater diversion structure will restrict the use of an additional 1½ acres of residential land.

No one, including minorities or low income families, will be adversly affected by the installation of the floodwater diversion structure.

FAVORABLE ENVIRONMENTAL IMPACTS

1. Land treatment will bring 120 acres under management.

2. Wildlife habitat will be improved on 126 acres of forestland.

3. The floodwater diversion structure will protect 11 properties and 800 feet of road from direct damages. Altogether 12 properties will be protected from isolation during flood events up to and including the 100-year flood event.

4. The floodwater diversion structure will provide a floodwater damage reduction benefit estimated to average $26,000 annually.

5. Areas reestablished in vegetative cover will increase plant diversity and edge available to wildlife.

ADVERSE ENVIRONMENTAL EFFECTS

1. The floodwater diversion structure will restrict the use of an additional 1½ acres of residential land in private ownership.

2. Construction activity will temporarily disturb wildlife and fish habitat and increase sediment, erosion and air and noise pollution levels.

3. A reduction in the density of vegetation will be apparent from the backyards of six homes.

4. Approximately one acre upstream of the diversionary dam will be inundated during the 100-year flood, this area is about the same as without the project floodplain.

LAND TREATMENT

Accelerated conservation land treatment alone would consist of woodland and wildlife habitat treatment, and technical assistance to the town, developers, and individual landowners.

Land use changes would continue at the present rate. The effects of conservation land treatment and land use changes would produce modifications to the existing environment and have no measureable effect in alleviating the existing flood problem. Quality of wildlife habitat will be improved through woodland management. Increased shrubby type growth would create additional food (fleshy fruit and browse material) and cover, all as a result of timber harvesting and underplanting.

ACQUISITION OF ALL FLOODPLAIN PROPERTY

The floodwater damages could be eliminated if all damageable properties were removed from the floodplain. By removing all 12 houses, the road damages would no longer be a problem. The houses would be removed and the lots regraded and seeded, and allowed to return to the natural state. The road could be shortened, the hard road surface removed and the area reseeded to natural vegetation. Habitat would be created for wildlife on those areas presently devoted to buildings. There would be an increase in habitat quality due to increased plant diversity for songbirds and small mammals, also the wildlife and fish would be less disturbed due to the absence of people and pets. This would leave the floodplain area in a natural state which would be an esthetically pleasing "streambelt" area. The removal of the road and the 12 houses along with the relocation of 12 family units would cause social and economic upheaval. This alternative would cost approximately $903,000. These costs would be for the relocation of the displaced families to equivalent housing, demolition of existing houses, removal of road and utilities and other facilities and the restoration of the area to native vegetation. (See Appendix A, Table E)

FLOODPROOFING AND FLOOD INSURANCE

These two items can be combined to provide an alternative to the planned project. The seven residential units that experience first floor flood damage from the Neck River could be floodproofed. Floodproofing, either by sealing the houses to make them water tight or by raising the house above flood levels would reduce damages to mop up type. The cost of floodproofing would be about $6,000 per house or approximately $42,000 total for the area. The eleven homes would still be subjected to yard flooding. The road would still be flooded and the area would still be impassable during times of flooding. Resultant disruption of use would continue to occur as would damage to the roadway from more severe storms. Floodproofing will inhibit the normal use of the property.

The unprotected properties and those which would have floodproofing would still need additional financial protection such as flood insurance. The addition of flood insurance would spread flood damage costs evenly over the years but would not relieve any of the problem. Flood proofing, though good in theory, requires investments in construction that are often not made. In a small watershed, action on the part of the homeowner, such as barrier erection, is too late to prevent damage.

This alternative would not significantly change fish, or wildlife habitat or alter other natural ecological systems.

STRUCTURAL ALTERNATIVES

Alternative 1 - Floodwater Retarding Structure

An evaluation of a floodwater retarding structure was made as to its effect on alleviating flooding in the Deepwood Drive area. This structure referred to as Site 1 would have a drainage area of 1.04 square miles or about 70 percent of the watershed. The Site 1 structure would be 26 feet high, require 11,000 cubic yards of fill, and store about 200 acre-feet of floodwater. Landrights for this site would require about 35 acres of land. The structural cost of Site 1 is estimated to be $175,000.

In the Deepwood Drive area, Site 1 would reduce the 100-year frequency flood stage by about one foot throughout the evaluation reach. Therefore, Site 1, although designed to retard 100-year frequency flood runoff, would only provide protection for up to 10-year frequency flood events in the Deepwood Drive area.

Environmental impacts include: clearing of woody vegetation for the earth embankment, borrow area, and the floodwater pool area. Increase in quality of remaining woodland wildlife habitat, primarily by developing edge values. Temporary loss of wooded wildlife habitat and increase in fish living space due to temporary floodwater storage.

Alternative 2 - Floodwater Retarding Structure Plus Channel

To provide flood protection from floods up to the 100-year frequency flood, it will be necessary to include the structure in Alternative 1, and enlarge the existing stream channel. This will require the construction of a rock-lined channel about 1,750 feet long with a six-foot base width, 2:1 side slope and 4.5 to 5-feet in depth. About 1,000 feet of the required channel passes through the back yards of three single-family houses and the front yards of four homes in a heavily wooded area. The channel top width would be about 25 feet wide. The existing stream channel crosses Deepwood Drive at two locations and three private driveways; these would have to be bridged. Height limitation might require use of multiple culverts or low span bridges. Design velocity for the 100-year flood event requires rock lining. The estimated cost for this alternative is $355,000. (See Appendix A, Table E)

Environmental impacts include: Those of Alternative 1 plus loss of existing aquatic resources in 1750 feet of stream during construction. Following reestablishment, fish habitat quality and quantity would be reduced. The result is some loss of canopy, instream cover, pools, riffles, diversity of bottom material and configuration, and stream and bank vegetation. In addition, distruction of woodland in lawn settings and disruption of yards during construction would occur. All disturbed areas would be seeded to vegetation having values for wildlife.

Alternative 3 - Floodwater Retarding Structure Plus Conduit

An alternative to the structure and channel is the structure with a concrete box culvert placed under Deepwood Drive. This would require the structure in Alternative 1 and about 400 feet of rock-lined channel with a six foot base width, 2:1 side slope, an inlet structure, and 1,200 feet of a 4' x 4' reinforced concrete box culvert ending with an energy dissipator. The cost of this alternative is estimated to be $449,000.

Environmental impacts include: Those of Alternative 1 plus Alternative 2 along 400 feet of stream (stream values at road crossing already reduced due to culvert placement). In addition, traffic would be disrupted during the installation period.

Alternative 4 - Channel Along Present Stream Course

This would require a rock lined channel about 1750 feet long with a 12 foot bottom width and 2:1 side slopes. Bridges at three private drive crossing and two on Deepwood Drive would be required. The estimated cost of this alternative is in excess of $250,000.

Environmental impacts include: Destruction of much of the woodland setting of properties involved to make room for channel proper. Disruption of families in problem area during construction. In addition, there would be a loss of existing aquatic resources in 1750 feet of stream during construction. Following reestablishment, fish habitat quality and quantity would be reduced. e.g. loss of canopy, instream cover, pools, riffles, diversity of bottom material and configuration and stream and bank vegetation.

NO PROJECT

Without the project the annual flood damage would not be reduced. Properties and families would continue to suffer damages and inconvenience from the recurrent flooding by the Neck River. The net annual monetary loss would be about $10,000.

The planned land treatment portion of the project would not be utilized. This lack of planning and technical assistance could, as the watershed develops, result in critical erosion and sediment problems.

Without project the temporary inconvenience of noise, air and sediment pollution would not be felt.

SHORT-TERM VERSUS LONG-TERM USE OF RESOURCES

Land use trends in the project area are established. The urbanization of the watershed should continue, and the area should continue to develop along the lines of private residential property. The project is harmonious, with the long-term use of the area, as it will be constructed upon existing private lots in the floodplain. Land treatment measures applied during the project will be compatible with future land use change.

With proper maintenance, the measures will be as effective at the end of their economic life as the day they were completed.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Two acres of land will be required for the floodwater diversion measures. This commitment of land will restrict the uses within the measure area on private lots along the west side of Deepwood Drive.

Completion of the project will require a commitment of $245,300 in capital, and 3.6 man-years of labor.

CONSULTATION AND REVIEW WITH APPROPRIATE AGENCIES AND OTHERS

In June of 1972, the town of Madison applied to the Connecticut Department of Environmental Protection for assistance in solving their flood problems in the Deepwood Drive area of the Neck River. The Soil Conservation Service through the New Haven County Soil and Water Conservation District was requested to determine the feasibility of providing assistance under the Small Watershed Protection and Flood Prevention Program (PL-566). The SCS determined that this is a feasible project. The Town of Madison Flood and Erosion Control Board became the local sponsor and the actions were endorsed by the New Haven County Soil and Water Conservation District.

Meetings between representatives of SCS, the Sponsor, DEP, the property owners in the damage areas and the general public have been held since the project was initiated in 1972. The first meeting was between local residents, SCS and DEP, and was held on June 15, 1972, in response to a request from local residents, who were experiencing flooding at that time. Again on June 20, 1972, flooding occurred and members of SCS visited the area along with local selectmen. Local residents discussed their problems and desires for project-type assistance. On November 22, 1972, a meeting was held with town officials, the public was welcome to attend. The required procedure for watershed application and authorization were explained and discussed.

Follow-up meetings and assistance culminated in an application in May 1973, which was submitted to the Secretary of Agriculture. The State/Federal Clearinghouse for Intergovernmental Relations was notified at this time.

Authority to make whatever surveys necessary within the watershed were given by the first selectmen on September 5, 1973. Whenever surveying or other activities occurred on private property, prior permission was obtained from the owner.

The SCS met with members of the Town of Madison Flood and Erosion Control Board on May 28, 1974. The members were informed of the progress of the study. Also, at this meeting, the responsibilities of the Sponsor and the SCS under the PL-566 program were explained.

On August 5, 1974, the SCS staff and town engineer met to coordinate biological, hydrologic, structural engineering and geologic (seismic) investigations.

Authorization for planning was requested on April 16, 1975. Planning was authorized by the administrator of SCS in May 1975. This received coverage in local news media.

The major public information hearing was held on March 25, 1976. At this hearing the watershed planning staff presented seven alternative plans for reduction of the flooding in Neck River. All homeowners subject to flooding on Deepwood Drive, with on exception, were present. The alternatives were discussed and one chosen. The landowners agreed to donate necessary landrights to the project. SCS agreed to proceed with the planning process and prepare the watershed plan.

A tour of the watershed for the New Haven County Soil and Water Conservation District was held on October 19, 1976. Explanation of the project and sponsor's responsibilities were given by the district conservationist and the watershed planning staff leader.

On May 10, 1977, the landrights map was reviewed with the Sponsor, and they agreed to advise SCS of any corrections or changes needed. The Sponsor agreed to acquire the necessary right of way for the project.

On July 19, 1977, the town engineer reviewed the proposed plan with the Inland and Wetland Commission and received approval.

Discussion of comments on Draft Plan and Environmental Impact Statement. Recipients of the Draft Plan are listed on page E-4. Responses were received from:

State of Connecticut, Department of Environmental Protection
Cooperative Extension Service, University of Connecticut
U. S. Department of Interior, Office of the Secretary
U. S. Department of Commerce, Assistant Secretary for Science and Technology
Mr. Thomas C. Hopkins, resident of Deepwood Drive
Mr. Ernest R. Coppock, III, resident of Deepwood Drive
U. S. Environmental Protection Agency, Region I
Department of the Army, Office of the Assistant Secretary
U. S. Department of Agriculture, Office of the Secretary

LIST OF APPENDICES

APPENDIX A

TABLE A

Selected Plan Neck River Watershed

NATIONAL ECONOMIC DEVELOPMENT ACCOUNT

Components	Measures of Effects (Average Annual) 1,2/
Beneficial Effects:	
A. The value to users of increased output of goods and services.	
1. Flood Damage Reduction	
a. Residential	$18,400
b. Road	4,200
c. Indirect	3,400
	$26,000
TOTAL BENEFICIAL EFFECTS	$26,000

Components	Measures of Effects (Average Annual) 1,2/
Adverse Effects:	
A. The value of resources required for the plan.	
1. Flood Prevention	
a. Project Installation	13,600
b. Project O&M	600
c. Project Administration	1,800
	$16,000
TOTAL ADVERSE EFFECTS	$16,000
NET BENEFICIAL EFFECTS	$10,000

1/ 100 years @ 6.375 percent interest
2/ Price Base: 1976

TABLE B

SELECTED PLAN - NECK RIVER WATERSHED

ENVIRONMENTAL QUALITY ACCOUNT

Components	Measures of Effects
Beneficial and Adverse Effects	
A. Areas of natural beauty.	1. The project will restrict the use of 2 acres of residential land which is in private ownership.
	2. The project will protect 11 residential properties from floodwater damages, improving the appearance of the landscape.
B. Quality consideration of water, land and air respources.	1. Water, air and noise pollution will be increase during project construction.
	2. The project will improve water quality by eliminating water scour through the damage area and thereby decreasing sediment deposition.
	3. The project will not change the normal flow of the stream but during excessively high stream flows, the floodwater will be diverted around the damage area protecting 11 residential properties.
C. Biological resources and selected ecosystems.	1. The project will change some wooded residential land and the existing ditch into channel area. This will result in increased edge habitat.
	2. The project will improve quality of forested area, and increase wildlife habitat and cover in the forest area.
D. Irreversible or irretrievable commitments.	1. Installation of the project will commit labor and capital to the project.

TABLE C

SELECTED PLAN NECK RIVER WATERSHED

REGIONAL DEVELOPMENT ACCOUNT

Components	Measures of Effects (Average Annual) 1,2/ Connecticut	Rest of Nation
Income		
Beneficial Effects:		
A. Value of increased output of goods and services to users residing in the region.		
1. Flood Damage Reduction		
a. Residential damages	$18,400	-
b. Road damages	4,200	-
c. Indirect damages	3,400	-
TOTAL BENEFICIAL EFFECTS	$26,000	-
Adverse Effects:		
A. Value of resources contributed from within the region to achieve the outputs.		
1. Flood Prevention		
a. Project Installation	$ 1,000	$12,500
b. Project O&M	600	-
c. Project Administration	200	1,600
B. Losses of output resulting from external diseconomies to users residing in the region.	-	-
C. Loss of assistance payments from sources outside the region to otherwise unemployed or underemployed resources.	-	-
TOTAL ADVERSE EFFECTS	$ 1,800	$14,100
NET BENEFICIAL EFFECTS	$24,200	($14,100)

1/ 100 years @ 6.375 percent.
2/ Price Base: 1976

TABLE C

SELECTED PLAN NECK RIVER WATERSHED

REGIONAL DEVELOPMENT ACCOUNT

Components	Measures of Effects	
	Connecticut	Rest of Nation
Employment		
Beneficial Effects:		
A. Increase in the number and types of jobs.		
1. Project construction period	2.3 man-years of skilled employment	-
	1.3 man-years of unskilled employment	-
2. Project operation and maintenance	0.1 man-years of unskilled employment	-
TOTAL BENEFICIAL EFFECTS	3.6 man-years during project installation period	-
	0.1 man-years of permanent full-time during project evaluation period	-
Adverse Effects:		
A. Decrease in number and types of jobs.		
TOTAL ADVERSE EFFECTS		
NET BENEFICIAL EFFECTS	3.6 man-years during project installation period	-
	0.1 man-years of permanent full-time during project evaluation period	-

TABLE C

SELECTED PLAN NECK RIVER WATERSHED

REGIONAL DEVELOPMENT ACCOUNT

Components	Measures of Effects	
	Connecticut	Rest of Nation
Population distribution Beneficial and adverse effects:	-	-
Regional economical base and stability Beneficial and adverse effects:	Project will create 3.6 man-years of employment during project installation period and 0.1 man-years full-time employment during project evaluation period. It will reduce average annual flood damages by $26,000.	-
Environmental conditions of special regional concern Beneficial and adverse effects:	-	-

TABLE D

SELECTED PLAN NECK RIVER WATERSHED

SOCIAL WELL-BEING ACCOUNT

Components	Measures of Effects
Beneficial and Adverse Effects	
A. Real Income Distribution	1. Create 0.1 man-years of low income permanent employment.
	2. Create regional income benefits of $24,200 distributed by income class as follows:

Income Class (Dollars)	Percentage of Adjusted Gross Income in Class	Percentage Benefits in Class
Less than 3,000	5	6
3,000 to 10,000	30	22
More than 10,000	65	72

3. Local cost to be borne by region total $1,300 with distribution by income class as follows:

Income Class (Dollars)	Percentage of Adjusted Gross Income in Class	Percentage Benefits in Class
Less than 3,000	5	5
3,000 to 10,000	30	30
More than 10,000	65	65

B. Life, Health and Safety	1. Provide protection from a storm event of 100-year frequency occurrence.

TABLE E

Summary Comparison Between Alternative #2, Acquisition of Floodplain Property and Selected Plan

Account	Selected Plan	Alternative #2	Acquisition of Floodplan Property
National Economic Development (Average Annual)			
Beneficial effects	$26,000	$26,000	$26,000
Adverse effects	$16,000	$22,700	$57,694
Net beneficial effects	$10,000	$ 3,300	($31,694)
Environmental Quality			
A. Areas of natural beauty	Use of 2 acres of residential property in private ownership will be restricted as to use.	The structure at Site 1 would create floodwater storage of 200 acre-feet of water.	This alternative would create a streambelt area with some recreational value.
B. Quality of land, water and air	Water, air and noise pollution will be increased during project construction.	Water, air and noise pollution will be increased during project construction.	Water, air and noise pollution will be increased during implementation of project.
	Project will not change normal flow of the stream but floodwater will be diverted around the damage area protecting 11 properties and improving the appearance of the landscape and reducing sediment deposition.	The structure and channel would require the clearing of natural vegetation in a heavily wooded area. Flood protection to the 11 properties would result.	Removal of houses and regrading and seeding of lots to native vegetation would return this area to a natural state.
C. Biological resources	The project will change increasing edge habitat along the channel. The quality and quantity of wildlife habitat will be improved through woodland management.	Woodland habitat in this area would be diminished, but edge habitat would increase. Storage of floodwater would temporarily increase fish living space.	The plan would increase wooded wetland and open land habitats. Fish and wildlife would be less disturbed with removal of the population.

TABLE E

Continued

Account	Selected Plan	Alternative #2	Acquisition of Flood-plain Property
D. Irreversible and irretrievable commitments.	Installation of project will commit labor and capital to the project.	Installation of the project will commit labor and capital to the project.	Implementation of this alternative would create social upheaval, and commit labor and capital to the project.
Regional Development (Average Annual)			
State of Connecticut			
A. Income			
Beneficial effects	$26,000	$26,000	$26,000
Adverse effects	$ 1,800	$ 2,300	$57,694
Net beneficial effects	$24,200	$23,700	($31,694)
B. Employment			
Project construction	3.6 man-years during project installation period	5.8 man-years during project installation period	.8 man-years during project installation period
Project O & M	.1 man-years of permanent fulltime during project evaluation period	.1 man-years of permanent full-time during project evaluation period	No permanent man-years
Social Well-Being			
Life, health and safety	Provide protection from a storm event of up to 100-year frequency occurrence.	Protect the watershed from storm events of up to 100-year frequency occurrence.	Create social and economic upheaval in the area by removal and eliminate the flood problem by elimination of effected property.

APPENDIX B

PROJECT MAP
NECK RIVER
NEW HAVEN COUNTY, CONNECTICUT

LEGEND

- DRAINAGE AREA DIVERTED BY STRUCTURE
- AREA BENEFITED
- FLOODWATER DIVERSION DAM
- FLOODWATER DIVERSION CHANNEL
- DAMAGE REACH NO. 1
- WATERSHED BOUNDARY
- ROADS
- STREAMS

SCALE – FEET

2000 0 2000 3000 4000

SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

APPENDIX C

UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20250

OFFICE OF EQUAL OPPORTUNITY

DEC 19 1977

IN REPLY REFER TO: 8140 Supplement 8

SUBJECT: Draft Watershed Plan and Environmental Impact Statement for the Neck River Watershed, Connecticut

TO: John W. Tippie
State Conservationist

THRU: Verne M. Bathurst, Deputy Administrator
for Management, Soil Conservation Service

The Draft Watershed Plan and Environmental Impact Statement (EIS) were reviewed by this office for the purpose of assessing the socio-economic impact of the project on minority groups living in or near the affected area.

Based on our evaluation, we concur in your finding that the project will have no adverse effect on the minority population residing in the affected area.

Thank you for allowing us to review this statement.

JAMES FRAZIER
Director

W/S - 26

SCS 06 30658

DEPARTMENT OF THE ARMY AGENCY SCS
OFFICE OF THE ASSISTANT SECRETARY SEC. ROUS.
WASHINGTON, D.C. 20310

78 FEB 7 P2:28

1 FEB 1978

Assistant Administrator
For Water Resources

Honorable Rupert Cutler
Assistant Secretary of Agriculture
Washington, D.C. 20250

Dear Mr. Cutler:

In compliance with the provisions of Section 5 of Public Law 566, 83d Congress, the State Conservationist of Connecticut by letter of 29 November 1977, requested the views of the Chief of Engineers on the combined draft watershed plan and environmental impact statement for the Neck River Watershed, Connecticut.

We have reviewed this work plan and foresee no conflict with any projects or current proposals of this Department. The opportunity to review the watershed plan is appreciated.

Sincerely,

Charles R. Ford

Charles R. Ford
Acting Assistant Secretary of the Army
(Civil Works)

RECEIVED NASHUA, N.H.
1978 FEB -9 PM 5:05
SOIL CONSERVATION SERVICE
WASHINGTON, D.C.

VANGUARD of FREEDOM
UNITED STATES ARMY

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

PEP ER-77/1089

FEB 8 1978

Mr. John W. Tippie
State Conservationist
Soil Conservation Service
Department of Agriculture
Mansfield Professional Park
Storrs, Connecticut 06268

Dear Mr. Tippie:

The Department of the Interior has completed its review of the work plan and draft environmental statement for Neck River Watershed, New Haven County, Connecticut. We have no comments on the work plan and have the following comments on the draft statement.

The description of soils on page E-11 suggests general characteristics of the geology of the area; however, the final statement should give sufficient information on the geology of the site of the proposed diversion dam to permit impact appraisal. If ground water is used in the vicinity, information on the aquifers utilized should be included along with an assessment of the possibility for changes in water levels and their effects on the human environment as a result of the operation of the proposed diversion structure and channel.

We suggest consideration of another non-structural alternative consisting of: 1) relocation of the four dwellings subject to major flooding; 2) following relocation, these lots could be transformed into open space for recreation use; 3) flood proofing of the three units subject to damage; 4) redesign of the existing culvert; and 5) an investigation to determine the feasibility of raising the roadway and repaving with an impervious material to cut down on maintenance costs. This suggestion is made because it may have a higher benefit/cost ratio and will promote conservation and preservation of floodplain resources.

We hope these comments will be of assistance.

Sincerely,

Larry E. Meierotto
Deputy Assistant SECRETARY

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230
(202) 377-3111

February 7, 1978

Mr. John W. Tippie
State Conservationist
U.S. Department of Agriculture
Mansfield Professional Park
Storrs, Connecticut 06268

Dear Mr. Tippie:

The draft environmental impact statement, "Neck River Watershed, New Haven County, Connecticut" has been received for review and comment. The draft statement has been reviewed and the following comments are offered for your consideration.

General Comments

This project for watershed protection and flood prevention is designed to alleviate the effects of periodic flooding on 12 families who become isolated as a result of storms and hurricanes in the area. The environmental statement should include specific information on rainfall and storms in the affected areas, including dates of specific events, and extent of actual damage incurred by affected homes and roadways. Also, the reference to the "isolation" of the 12 affected families deserves amplification: was access by boat possible during specific flood situations? Was there danger to health and safety?

The inclusion of specific flooding incidences in the chapter on Floodwater Damage (page E-19) would strengthen the environmental statement.

We appreciate the opportunity to offer our comments, which we hope will be of assistance to you. We would appreciate receiving eight (8) copies of the final statement.

Sincerely,

Sidney R. Galler

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

100 DEEPWOOD DRIVE
MADISON, CT. 06443
JANUARY 30, 1978

MR. FRANK INDORF
DISTRICT CONSERVATIONIST
WALLINGFORD, CT.

DEAR SIR:

IN REGARD TO OUR TELEPHONE CONVERSATION THIS AFTERNOON CONCERNING THE NECK RIVER WATERSHED REPORT AND PLANNED DIVERSION STRUCTURE, I AM SUBMITTING SOME OF MY QUESTIONS AND COMMENTS. MY ORIGINAL LIST WITH REFERENCES TO THE REPORT IS TOO LENGTHY CONSIDERING THE TIME CONSTRAINTS YOU DESCRIBED.

THE WIDE VARIETY OF PROBLEM AREAS AND DELAY IN SUBMISSION OF THESE QUESTIONS IS MAINLY DUE TO THE FACT THAT THE TOWN HAS NOT YET VISITED ON SITE FOR EASEMENT DISCUSSION (PROMISED FOR AUGUST 1977 AND AGAIN IN DECEMBER 1977) AND LACK OF INFORMATION UNTIL THE U.S.D.A. DRAFT STATEMENT WAS ISSUED.

I DESIRE TO MEET PERSONALLY WITH RESPONSIBLE INDIVIDUALS WHO COULD ANSWER QUESTIONS AND DISCUSS PROBLEMS REGARDLESS OF WHERE THE RESPONSIBILITY FOR THE PROBLEM AREA MAY EXIST; THE TOWN, SCS, ETC. THE MOST DESIREABLE PLACE FOR DISCUSSION WOULD BE MY HOME, THE ACTUAL CHANNEL SITE.

CONTACT ME AT ANY TIME: HOME - 421-4445; BUSINESS - 669-8601 x636.

SINCERELY,

Thomas C. Hopkins

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE OFFICE BUILDING HARTFORD, CONNECTICUT 06115

December 20, 1977

Mr. John W. Tippie
State Conservationist
U.S.Department of Agriculture
Mansfield Professional Park
Storrs, Connecticut 06268

Dear Mr. Tippie:

Enclosed please find the comments of the Planning and Coordinating Unit of the Department of Environmental Protection with regards to the Draft Watershed Plan and Environmental Impact Statement for the Neck River Watershed in Madison, Connecticut.

If you have any questions on this matter please do not hesitate to call upon me.

Sincerely,

Joseph D. Laforte

Joseph D. Laforte
Acting Director
Planning & Coordination Unit

JDL:iw
Enclosure

Cooperative Extension Service THE UNIVERSITY OF CONNECTICUT
STORRS, CONNECTICUT 06268

January 23, 1978

Mr. J. W. Tippie
Soil Conservation Service
Mansfield Professional Park
Storrs, CT 06268

Dear Dub:

We have reviewed the Neck River Watershed Environmental Impact Statement and wondered whether or not an analysis was made to have the community move into a relocation program with the few homes involved. It seems to us that this is an expensive project to make decent building lots on lots that probably shouldn't have been built on in the first place.

Another question, although not related to your work, is whether or not the Town of Madison has made flood insurance available to the residents in the Neck River Watershed.

Sincerely yours,

George E. Whitham
Associate Director
of Extension

jep

March 5, 1978

TO: The United States Department of Agriculture; Soil Conservation Service;
Storrs, Connecticut 06268

FROM: Ernest R. Coppock, III; 106 Deepwood Drive; Madison, Connecticut 06443

SUBJECT: Draft Watershed Plan and Environmental Impact Statement-Neck River Watershed
(Proposed Flood Control Project-Deepwood Drive, Madison, Connecticut)

I have reviewed the above referenced proposed project and now have some questions regarding this plan.

After reading the various alternative plans for the control of the flood waters on Deepwood Drive, I am not convinced that the plan as outlined in the above report is the best of the alternatives given. I realize that the proposed dike and diversionary channel will produce the desired end-results, but I honestly believe that a more desireable method of providing relief is available.

I am concerned about the effect of this open channel upon the present and future values of my property. As proposed, the channel will render 50% of my lot inaccessible by foot. Granted, at times I could walk through the channel, however, bringing firewood through this channel would become quite a project. In addition to the problems of inaccessibility, I am greatly concerned about the removal of the tree line between this proposed channel and my house. The entire umbrella of trees immediately to the rear of my present lawn area would be removed for a considerable distance. This not only would affect the shading of my rear lawn area, but without this buffer of trees would put this open channel in full clear view from my house. Although the overall plan may increase the property values for some, I feel that this plan would decrease my own property value.

With the open channel so near my house, what are the chances of any water from this channel now causing a serious problem to my property? Could the channel produce any standing ground water at the lower elevations along the route of flow?

During construction of this channel, will blasting with explosives be required? At such a close proximity to a house, what are the risks involved regarding injury or property damage? What other construction methods will be used that may present a hazard to people or property?

If the channel is constructed at the location as noted in the report, a considerable amount of standing timber will be removed. Who will receive the proceeds from the sale of this wood? Will property owners be reimbursed for any material that must be removed from their land? What about the replanting of vegetation? The report is very unclear on specific information in this area. Could a hedgerow or other similar planting of bushes, shrubs or other similar growths be planted to obscure the direct line of vision of this channel from my rear yard? Other property that the channel passes through will have some type of trees remaining to block the view of the channel or the channel is so far

to the rear of some property that the view of this open channel and the removal of the immediate tree line is not a major concern.

What about the open channel maintaining pools of standing water as a breeding ground for mosquitoes and other nuisance insects? Insects such as these are a problem in this area and any such pools of standing water in warm weather will only further aggravate this situation.

With the channel cutting my property in half, is some form of foot access available? Specifically, can a reasonable foot bridge be installed for my access to the rear of my property? I realize that the channel cuts several property lines; however, I note only two that are cut as closely to the houses and front half of the property so as to require access to the rear portion of the land. This would also hold true for the planting of a hedgerow for hiding the open channel from direct view.

I have not had the opportunity to discuss the exact location of the channel through my property with anyone on the actual site of the channel. I would very much be interested in seeing the exact boundaries of this channel laid out on my property. There is now one stake showing, I believe, the center line of the channel at only one location on my property. I must be informed of the exact location of the run of the channel entering my property and leaving, as well as the various designations of number and location of trees to be removed, location of excavations, etc. It is very difficult for me to transfer the information on the drawings furnished to me onto exact, specific locations on my land.

I must be very honest in telling you that I have many reservations about this open channel running through my rear yard at such a close proximity to the house. I believe that we are sacrificing future permanent problems in exchange for a minor inconvenience during construction of one of the other alternatives outlined in your report. I would greatly accept the closed conduit running under the street in preference to any open channel. I realize that during construction some minor inconveniences (temporary loss of access to driveways) would be present in this plan; however, the long term effects of both plans greatly favor the closed conduit over the open channel. There would be less of a decrease in anyone's property value because of the existence of any open channels. I am deeply concerned about the location of this proposed channel and the overall short-term and long-term effects upon my property value as well as the loss of aesthetics from such items as loss of trees, bushes and other vegetation. I have many doubts about the feasibility of this channel for this particular application. I am confident that the best overall plan is the conduit under the street and would request that further consideration be given this alternative.

I apologize for the lack of continuity in this memorandum; however, I have had very little time recently to devote to letter writing, and I wanted to get this to you as soon as possible. I would appreciate any further information you may have concerning this project and any answers to my questions you could provide.

cc: Stuart Mc Millan; Town Engineer; Town of Madison, Connecticut 06443

Connecticut Department of Environmental Protection

1. Comment: The alternative of floodproofing and flood insurance will be about $6,000 per house or $42,000 total with the lawns and road still subject to flooding. It would seem that this alternative should be proposed as it would adequately protect property; the only remaining flooding effect would be inconvenience and it does not seem plausible to spend $203,300 for convenience when a simple evacuation of the residents threatened for a short period of time would alleviate the isolation.

   Response: The floodproofing alternative is considered to be inadequate by the sponsor for protection of life and property. Emergency evacuation procedures and standby housing would probably be utilized on repeated occasions each year. Flood insurance does not eliminate the national economic losses due to flooding. It provides individuals with some compensation but does not prevent social upheavel.

2. Comment: The analysis of benefits and costs is questionable as there is no data or assumptions listed for benefits. The annual benefit of $26,000 is not supported in the document with respect to residential flood damage.

   Response: Flood damage reduction is based upon historical data for this watershed. The EIS and plan contain the results of the economic study. The basic economic data and computations are maintained in the SCS state office.

3. Comment: Utilization of a 100-year storm is acceptable given a proper weighting of its probability of occurrence over the project life. A 100-year project life is excessive given the rural nature of the area. One hundred-year periods have been judged acceptable only for densely populated urban areas.

   Response: The structure is designed to last for 100 years and will probably function for a longer period. Current practice in watershed analysis is to amortize the project cost over the expected useful economic life of the project or 100-years, which ever is less. Design must also remove apparent risk of loss of life in the area affected by the project measure.

4. Comment: There is a similar data deficiency relating to option for removal and relocations ($903,000) as an alternative.

   Response: See response to comment 2.

Cooperative Extension Service, University of Connecticut

1. Comment: Was an analysis made of 'relocation' alternatives?

   Response: The acquisition of all floodplain property was evaluated as an alternative (page E-27). It was found to be socially disruptive and costly.

2. Comment: Has the town of Madison made flood insurance available to residents of Neck River Watershed?

   Response: Flood insurance is available in the town of Madison. The town is in the emergency phase of the program.

United States Department of Interior, Office of the Secretary

1. Comment: The final statement should give sufficient information on geology of site to permit impact appraisal.

   Response: Sufficient geological work was done on the site for engineering planning. USGS material was utilized for site evaluation as well as the SCS soils data. We believe the discussion on page E-11 and E-12 to be sufficient to determine there will be no adverse impact on groundwater or septic systems from the project.

2. Comment: If groundwater is used in the vicinity, information on acquifier utilization should be included along with an assessment of possibilities for changes in water levels and their effects on the human environment.

   Response: See comment 11 - Mr. Thomas Hopkins.

3. Comment: The USDI suggests consideration of other non-structural alternatives consisting of 1) relocation, 2) transferring lots into recreational use, 3) flood proofing, 4) resdesign of existing culvert, 5) raise roadway and repaving withimpervious material.

   Response: See page E-27. We do not believe this recombination of alternatives is viable. Also, see comment 1 - Cooperative Extension Service.

United States Department of Commerce
Assistant Secretary for Science and Technology

1. Comment: The EIS should have contained specific information on dates of rainfall and storm damages.

   Response: Specific rainfall and storm information are given under the Environmental Setting, page 11. The most recent severe flooding occurred on January 26, 1978. We became involved because of a severe storm on June 19, 1972, when the flood discharges were estimated to be about 10-15 year frequency.

2. Comment: Was accessibility by boat possible?

   Response: The gradient of Deepwood Drive is about 5% through the project area. Water velocities in excess of 10 feet per second will occur during passage of a storm of the magnitude of the June 1972 storm. Depths of flow and the high velocities from storms above a 10-year frequency will make access to the area impossible.

Mr. Thomas Hopkins, 100 Deepwood Drive

1. Comment: Will landscaping and planting be provided to the homeowner to hide the channel?

   Response: The channel will not be visible from the first flood of Mr. Hopkin's home. Disturbed areas, including the raised berm portion on the western edge of Mr. Hopkin's property will be planted to grasses and legumes. Vegetative screens can be placed as part of land rights agreement, visual resource mitigation measures can be installed as a construction cost with the concurrance of the SCS landscape architect.

2. Comment: Will there be replacement of trees where possible?

   Response: Trees will not be replaced in kind. Replantings may be made if construction requires taking of trees outside of O&M area.

3. Comment: Will the homeowner be allowed (through written agreement on easement) to plant trees, shrubs, or gardens on easement land?

   Response: Operation and maintenance areas must be kept free of obstructions to allow proper hydraulic function of diversion. Vegetation on floodwater diversion dam and dike must be limited to approved grasses and legumes. Other construction areas can contain trees, shrubs, or gardens.

4. Comment: Will the homeowner be consulted on any work done outside of actual channel space (removal of trees, grading, filling, etc.)?

   Response: Work will be contained inside of easement areas.

5. Comment: Will backyard areas be reseeded and replanted?

   Response: Only disturbed areas will be reseeded and replanted.

6. Comment: Will cut trees be sold, disposed of or let for firewood?

   Response: All material will be properly disposed. Arrangements can be made during landrights negotiations for wood or spoil.

7. Comment: Will the existing ditch be filled where the channel does not cross it?

   Response: Most of the existing channel is contained within the new excavation. Where it is not, it will be filled with clean material from the excavation site and seeded.

8. Comment: The channel, temporary easement area and permanent easement area should be marked now to indicate to the homeowner the space required. In studying the map, the temporary and permanent easement areas appear to be too wide and too close to the house.

   Response: Permanent and temporary easements are determined by only what is considered necessary to accomplish the construction job.

9. Comment: The easement is too restrictive to the homeowner.

   Response: The easement is designed to be fair to all parties.

10. Comment: In consideration of safety, the environment and convenience, a foot bridge crossing the channel should be provided (large enough to accommodate a lawn mower or garden equipment and equipped with rails to prevent falls into the channel. A fence with a gate to the bridge should be considered.

    Response: There is no bridge crossing, fencing, etc., across or along the existing diversion. The work contemplated under PL-566 will enlarge the diversion. It will move the flood danger from the street to the channel. The new diversion channel will be no less difficult to cross than the present one.

11. Comment: Will water seepage from the channel affect my well or septic system?

    Response: The duration of flow within the channel will not be long enough to affect the well or septic system.

12. Comment: It seems likely that leaves, snow, and ice could block the channel causing flooding to my property and home.

    Response: The uniform configuration and anticipated velocity will minimize the possibility of diversion channel blockage.

13. Comment: In case of a storm greater than the 100 year, it appears that my property and house could flood, your map indicates this would not happen without the structure.

    Response: The floodwater diversion channel depth, including berm, adjacent to Mr. Hopkin's property will be eight feet. The 100-year storm will flow three feet deep, leaving a freeboard of five feet which will adequately convey storms of a much greater magnitude.

14. Comment: Will the town be able to keep channel clear? At present they are unable to keep the under road conduit clear causing more water than necessary to run into the road.

14. Response: The sponsor is obligated under the operation and maintenance agreement to keep the channel free of obstructions and safely maintained. The cooperation of adjacent homeowners is a necessary part of this.

15. Comment: In reference to 11, 12, 13, and 14, would I be provided with insurance against water damage?

Response: No!

16. Comment: Will a permanent structure be replaced if removed from easement area? (gym set placed in ground with concrete)

Response: This is dependent upon easement negotiations.

17. Comment: Will damages caused by construction, blasting, accidents, etc., be repaired or paid for by the town or government?

Response: Any damages caused by construction will be the responsibility of the contractor.

18. Comment: Will homeowners be able to request and receive immediate service or repair to structure at any time?

Response: The structural units will be repaired as stated in the operation and maintenance agreement.

19. Comment: Would erosion be corrected by the town?

Response: Erosion caused or resulting from construction will be covered under the contract. If it occurs at a later date, it will be corrected by the town as part of operation or maintenance.

20. Comment: What methods of entrance to the easement area would be allowed?

Response: Entrance to the O&M area will be at access points covered by original easements.

21. Comment: Will there be blasting? Will it be scheduled with homeowners?

Response: From geological investigations during the planning stages, no blasting is anticipated. Should blasting be found necessary, all safety precautions will be taken and homeowners informed.

22. Comment: The permanent easement should be on the channel area only.

Response: Permanent easement will include areas required for proper operation and maintenance of facilities which includes the floodwater diversion channel, floodwater diversion dam and dike areas.

23. Comment: All plans, proposals, agreements and objections should be reviewed with individual homeowners as it affects his property and be recorded and signed.

Response: On pages E-35 and E-36 of the draft watershed plan and environmental impact statement, a review of the public meetings and agreements is given. A review of the alternatives was held at a local meeting on March 26, 1977. A review of this draft watershed plan and the EIS was held at a public meeting on December 1, 1977.

24. Comment: An alternative plan seems more desireable to me. However, discussion of this may be futile considering the time involved and funds availability.

Response: At a public meeting held on March 26, 1977, the homeowners decided upon the alternative presented by the SCS. The watershed plan is based on that decision.

Mr. Ernest R. Coppock III, Deepwood Drive

1. Comment: The channel will make 50 percent of my property inaccessible.

   Response: The construction of the channel with side slopes at 1.5 to 1 will make the back half of your lot no less accessible. The nearly dry ditch now there will be incorporated into our diversion and the planned diversion will flow only during rainstorms.

2. Comment: The treeline will be removed from the back of my house and decrease my property value.

   Response: The removal of trees for a distance of about 40 feet is 10 percent of your lot. We can understand your concern but not the degree of impact you claim, especially with approximately 20 feet now involved in the present ditch. Landscaping will be coordinated with you to reduce the view of the planned diversion from your home. The diversion is to be vegetated with grasses and maintained. We cannot determine if your property values will be decreased because of the work, especially as there is already an unkept excavation present.

3. Comment: Will the channel cause water to get into my house?

   Response: The diversion channel, although designed to convey the 100-year storm discharge, will contain a 500-year storm discharge within its banks. The channel gradient rules out the possibility of any standing water. The diversion will not adversely affect the groundwater table.

4. Comment: Will blasting be needed?

   Response: The foundation investigation indicates that the density of the rock anticipated can be handled without blasting. In the event that blasting is necessary every precaution will be taken to insure little or no risk will occur to property and residents.

5. Comment: The right to the timber removed.

   Response: The disposition of timber will be the responsibility of the contractor. Negotiations for the timber can take place at the time of landrights settlement. A single price will be negotiated for landrights including the timber.

6. Comment: What about replanting of the vegetation?

   Response: Some replanting will be done by the sponsor under the guidance of a landscape architect. This will restore visual value. Future plantings on private property not affected by construction are the responsibility of the landowner.

7. Comment: Will there be standing water in the channel that will cause mosquito breeding?

   Response: The channel will be constructed with a uniform grade and should contain no standing water.

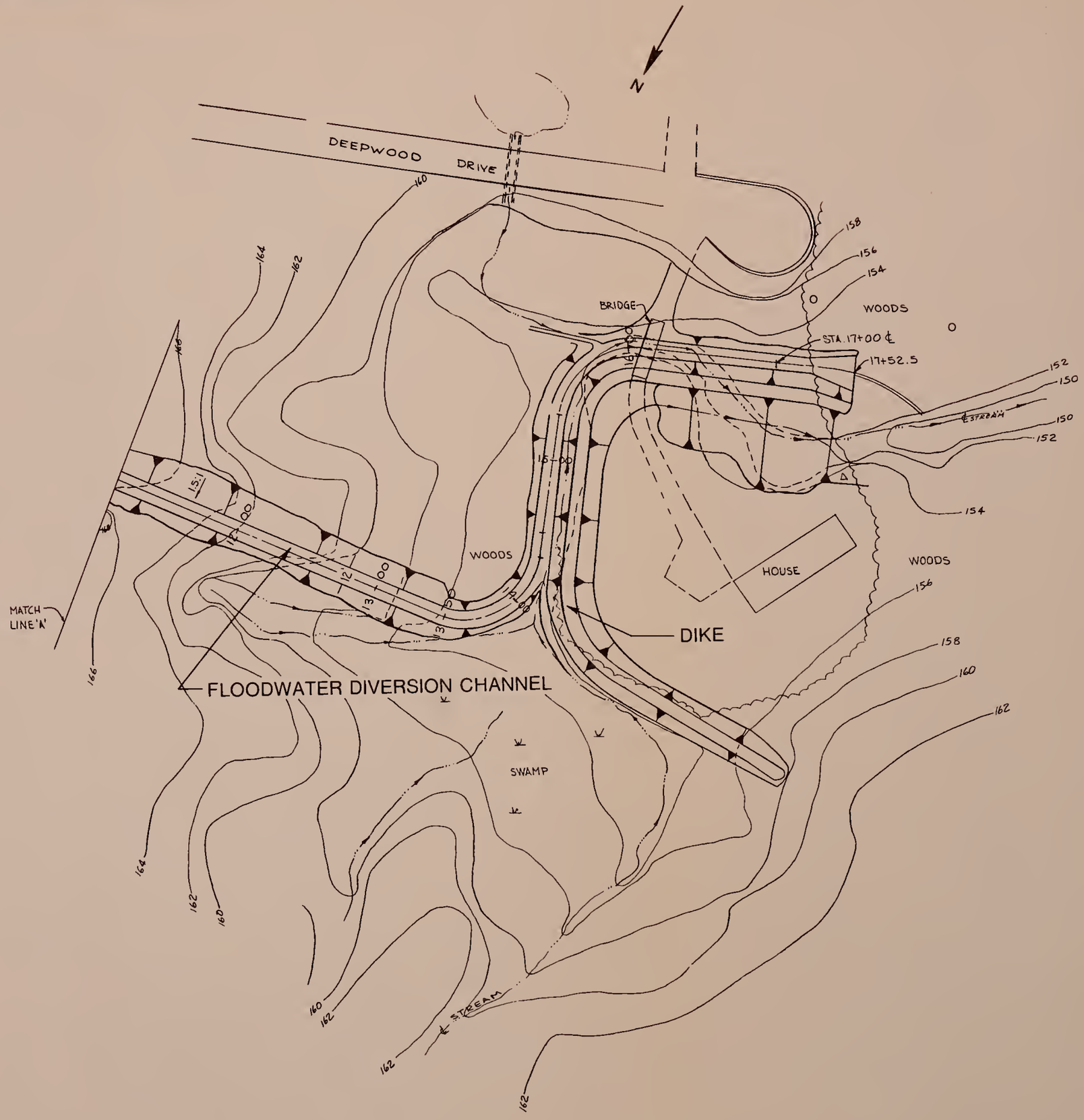
8. Comment: Can a footbridge be constructed across the channel?

   Response: Construction of a footbridge is possible though im practical as it would be nearly 40 feet long. Since the new diversion will have flatter side slopes than the existing channel, access to the back portion of your property will be improved. See comment number 1.

9. Comment: Where is the channel located?

   Response: The diversion channel is such that it will follow the path of the existing open ditch with some minor straightening. Some of this is planned where the diversion crossed your property. This will result in a diversion centerline location being further from your home than the existing ditch centerline.

APPENDIX D



SCALE
0 40 80
CONTOUR INTERVAL-2 FT.

NECK RIVER WATERSHED
FLOODWATER DIVERSION
NEW HAVEN COUNTY
MADISON, CONNECTICUT

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FIGURE 1

USDA-SCS HYATTSVILLE MD 1977

DEEPWOOD DRIVE

N

HOUSE

STREAM

STA. 1+72

HOUSE

PARKING AREA

HOUSE

WOODS

STA. 3+50

FLOODWATER DIVERSION CHANNEL

HOUSE

HOUSE

HOUSE

WOODS

FILL

FLOODWATER DIVERSION DAM

MATCH LINE 'A'

STA. 11+55

WOODS

CONTOUR INTERVAL-2 FT

SCALE

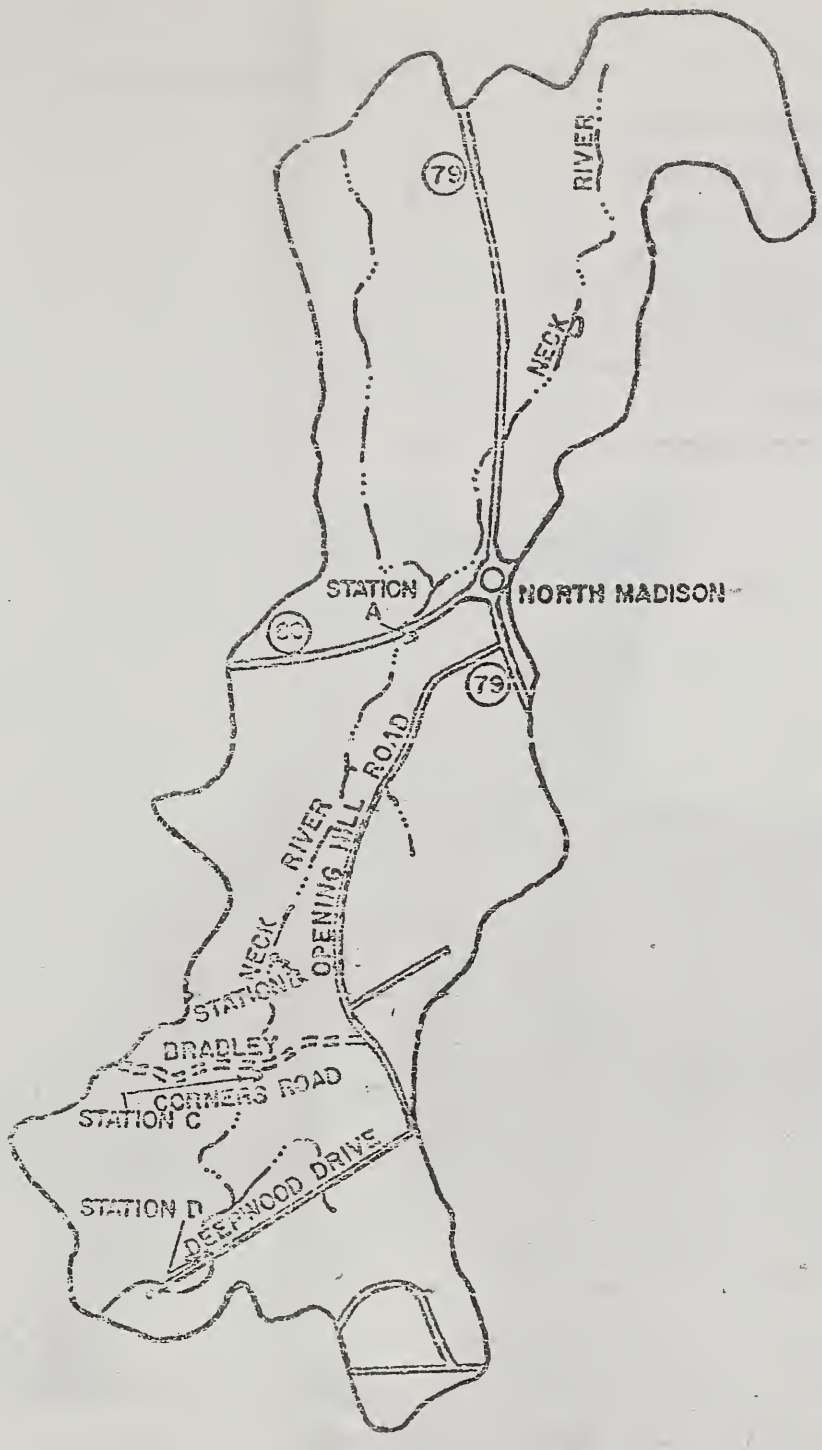
0 40 80

NECK RIVER WATERSHED
FLOODWATER DIVERSION
NEW HAVEN COUNTY
MADISON, CONNECTICUT

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FIGURE 2

USDA-SCS HYATTSVILLE MD 1977



NECK RIVER WATERSHED
NEW HAVEN COUNTY
CONNECTICUT
WATER QUALITY TEST STATIONS
July 22-23, 1974

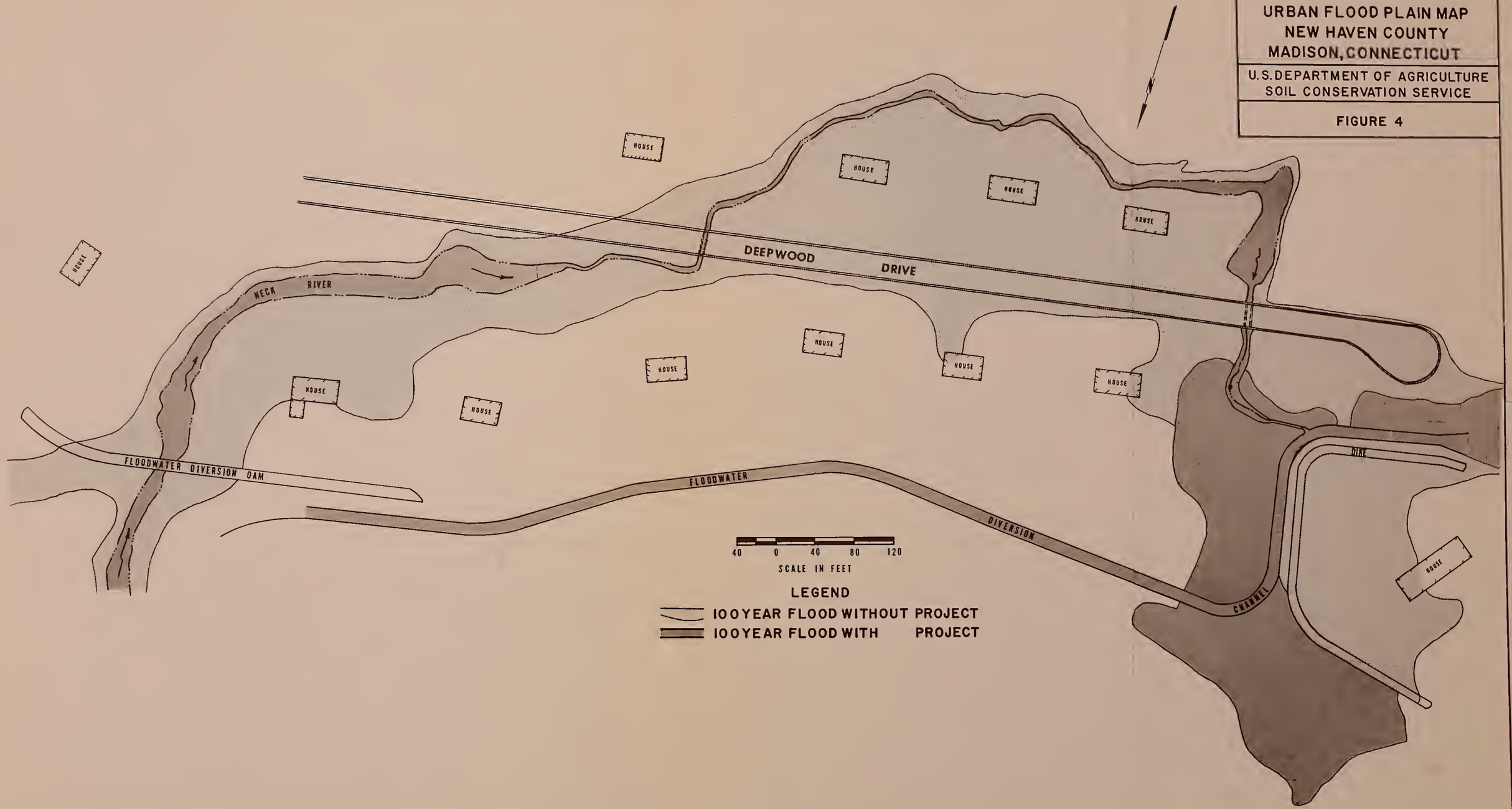
Scale: 1"=2,000'

FIGURE 3

NECK RIVER WATERSHED
URBAN FLOOD PLAIN MAP
NEW HAVEN COUNTY
MADISON, CONNECTICUT

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FIGURE 4



APPENDIX E

Office of the
STATE
HISTORIC
PRESERVATION
OFFICER
for Connecticut

59 SOUTH PROSPECT STREET • HARTFORD, CONNECTICUT 06106 • 203 566-3005

Sept.23,1977

Mr. John W. Tippie
State Conservationist
U.S. Dept. of Agriculture
Mansfield Professional Park
Storrs, Conn. 06268

Subject: Neck River Watershed Plan, MADISON,CT.

Dear Mr.Tippie:

The State Historic Preservation Officer has reviewed the above-named project. In the opinion of the State Historic Preservation Officer, the project will have no effect on historic, architectural or archaeological resources listed on or eligible for the National Register of Historic Places.

Sincerely,

DAP:aas

John W. Shannahan
State Historic Preservation
Officer